

NATIONAL HEALTHCARE QUALITY REPORT 2012

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Note: Appendixes will be available at a later date and will include Data Sources, Detailed Methods, and Measure Specifications.

Highlights From the 2012 National Healthcare Quality and Disparities Reports

The U.S. health care system is designed to improve the physical and mental well-being of all Americans by preventing, diagnosing, and treating illness and by supporting optimal function. Across the lifespan, health care helps people stay healthy, recover from illness, live with chronic disease or disability, and cope with death and dying. Quality health care delivers these services in ways that are safe, timely, patient centered, efficient, and equitable.

Unfortunately, Americans too often do not receive care they need, or they receive care that causes harm. Care can be delivered too late or without full consideration of a patient's preferences and values. Many times, our system of health care distributes services inefficiently and unevenly across populations. Some Americans receive worse care than others. These disparities may occur for a variety of reasons, including differences in access to care, social determinants, provider biases, poor provider-patient communication, and poor health literacy.

Each year since 2003, the Agency for Healthcare Research and Quality (AHRQ) has reported on progress and opportunities for improving health care quality and reducing health care disparities. As mandated by the U.S. Congress, the *National Healthcare Quality Report* (NHQR) focuses on “national trends in the quality of health care provided to the American people” (42 U.S.C. 299b-2(b)(2)). The *National Healthcare Disparities Report* (NHDR) focuses on “prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations” (42 U.S.C. 299a-1(a)(6)).

As in previous years, we have integrated findings from the 2012 NHQR and NHDR to produce a single summary chapter. This is intended to reinforce the need to consider concurrently the quality of health care and disparities across populations when assessing our health care system. The National Healthcare Reports Highlights seek to address three questions critical to guiding Americans toward the optimal health care they need and deserve:

- What is the status of health care quality and disparities in the United States?
- How have health care quality and disparities changed over time?ⁱ
- Where is the greatest need to improve health care quality and reduce disparities?

Three themes from the 2012 NHQR and NHDR emphasize the need to accelerate progress if the Nation is to achieve higher quality and more equitable health care in the near future:

- Health care quality and access are suboptimal, especially for minority and low-income groups.
- Overall quality is improving, access is getting worse, and disparities are not changing.
- Urgent attention is warranted to ensure continued improvements in:
 - Quality of diabetes care, maternal and child health care, and adverse events.
 - Disparities in cancer care.
 - Quality of care among states in the South.

ⁱ Data years vary across measures. For most measures, trends include data points from 2000-2002 to 2008-2010.

Health Care Quality and Access Are Suboptimal, Especially for Minority and Low-Income Groups

A key function of the reports is to summarize the state of health care quality, access, and disparities for the Nation. This undertaking is difficult, as no single national health care database collects a comprehensive set of data elements that can produce national and state estimates for all population subgroups each year. Rather, data come from more than three dozen databases that provide estimates for different population subgroups and data years. While most data are gathered annually, some data are not collected regularly or are old. The full set of measures tracked in the reports includes measures of access to health care (e.g., having health insurance and having a regular provider) and measures of quality of health care delivered (e.g., receipt of specific services needed to treat or prevent a medical condition and outcomes of treatment).

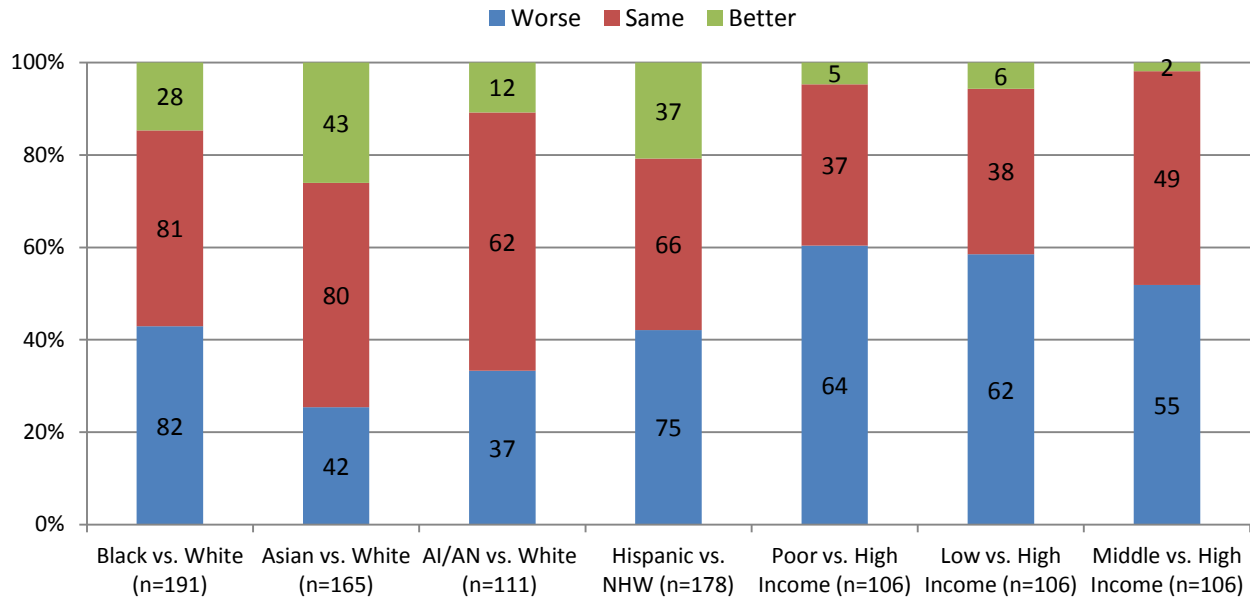
Despite the data limitations, our analyses indicate that access to health care and quality of health care in America are suboptimal. On average, in 2009, 26% of Americans reported barriers that restricted their access to care. Entry into the health care system did not ensure high-quality care. On average, in 2009, Americans received 70% of indicated health care services and failed to receive 30% of the care they needed to treat or prevent particular medical conditions. The gap between best possible care and what is routinely delivered remains substantial across the Nation.

All Americans should have equal access to high-quality care. Instead, we find that racial and ethnic minorities and poor people often face more barriers to care and receive poorer quality of care when they can get it. In previous years, we assessed disparities using a set of core measures. This year, we analyze disparities using the full set of measures tracked in the reports. We observe few differences in results from the core and full measure sets and present findings from the full measure set here.

For each measure, we examine the relative difference between a selected group and its reference group. Differences that are statistically significant, are larger than 10%, and favor the reference group are labeled as indicating worse quality or access for the selected group. Differences that are statistically significant, are larger than 10%, and favor the selected group are labeled as indicating better quality or access for the selected group. Differences that are not statistically significant or are smaller than 10% are labeled as the same for the selected and reference groups.

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Figure H.1. Number and proportion of all quality measures for which members of selected groups experienced better, same, or worse quality of care compared with reference group



Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.

Better = Population received better quality of care than reference group.

Same = Population and reference group received about the same quality of care.

Worse = Population received worse quality of care than reference group.

Note: For each measure, the most recent data available to our team were analyzed; for the vast majority of measures, this represents data from 2008, 2009, or 2010.

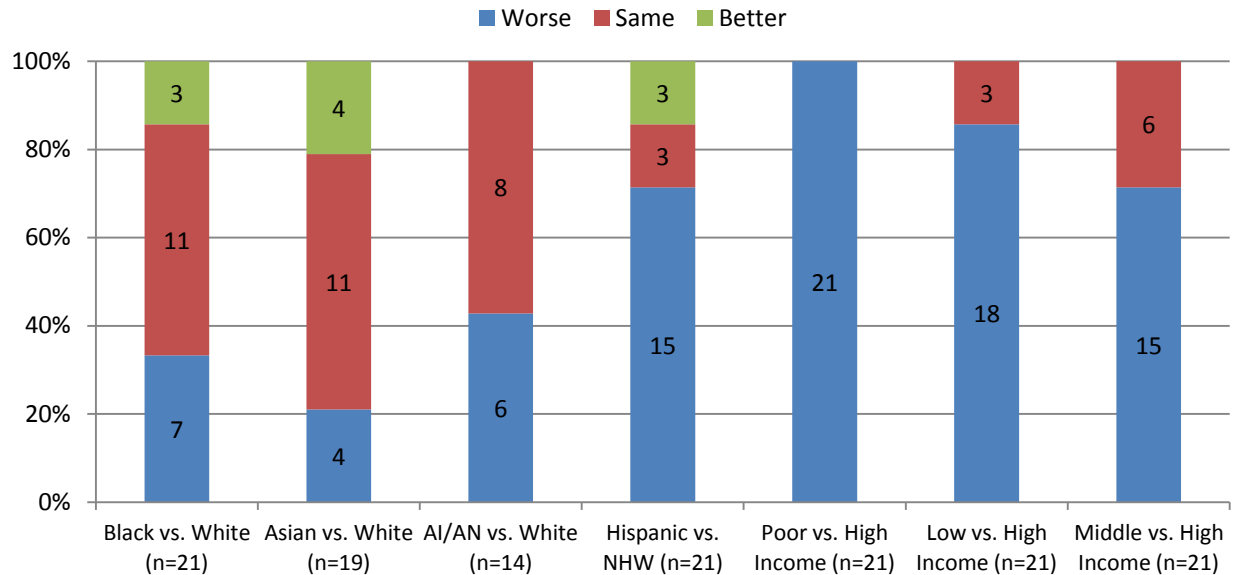
- **Disparities in quality of care are common:**

- Blacks received worse care than Whites, and Hispanics received worse care than non-Hispanic Whites for about 40% of quality measures (Figure H.1).
- American Indians and Alaska Natives (AI/ANs) received worse care than Whites for one-third of quality measures.
- Asians received worse care than Whites for about one-quarter of quality measures but better care than Whites for a similar proportion of quality measures.
- Poor and low-income people received worse care than high-income peopleⁱⁱ for about 60% of quality measures; middle-income people received worse care for more than half the measures.

ⁱⁱ Throughout the Highlights, poor, low income, middle income, and high income indicate individuals whose household income is <100%, 100-199%, 200-399%, and 400% or more of the Federal poverty level, respectively.

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Figure H.2. Number and proportion of all access measures for which members of selected groups experienced better, same, or worse access to care compared with reference group



Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.

Better = Population had better access to care than reference group.

Same = Population and reference group had about the same access to care.

Worse = Population had worse access to care than reference group.

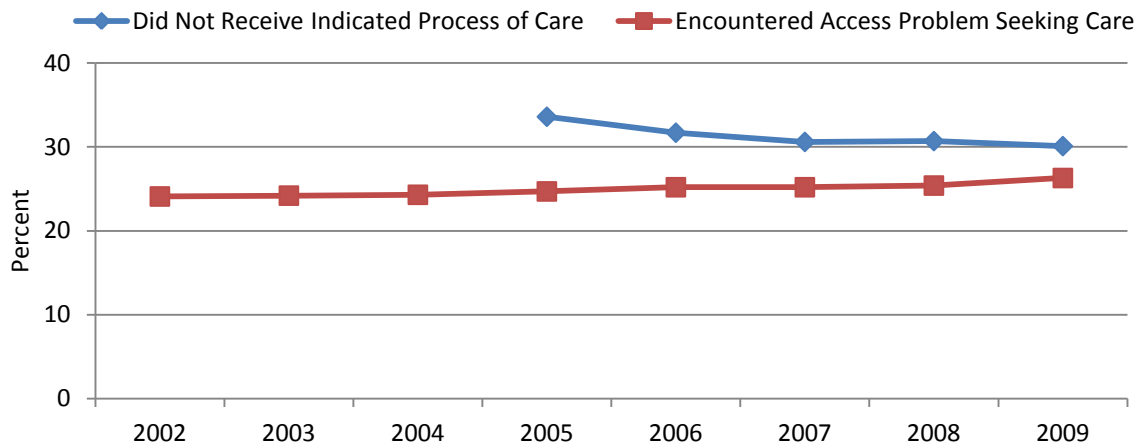
Note: For each measure, the most recent data available to our team were analyzed; for the vast majority of measures, this represents data from 2008, 2009, or 2010.

- **Disparities in access are also common, especially among AI/ANs, Hispanics, and poor people:**
 - Blacks had worse access to care than Whites for one-third of measures, and AI/ANs had worse access to care than Whites for about 40% of access measures (Figure H.2).
 - Asians had worse access to care than Whites for about 20% of access measures but better access to care than Whites for a similar proportion of access measures.
 - Hispanics had worse access to care than non-Hispanic Whites for about 70% of measures.
 - Poor people had worse access to care than high-income people for all measures; low-income people had worse access to care for more than 80% of measures, and middle-income people had worse access to care for about 70% of measures.

Overall Quality Is Improving, Access Is Getting Worse, and Disparities Are Not Improving

Suboptimal health care is undesirable, but we may be less concerned if we observe evidence of vigorous improvement. Hence, the second key function of these reports is to examine change over time. New this year, we assess changes in average performance through 2009 across a fixed panel of quality of care process measures and access to care measures.

Figure H.3. Average performance across a panel of quality of care process measures and access to care measures, 2002-2009



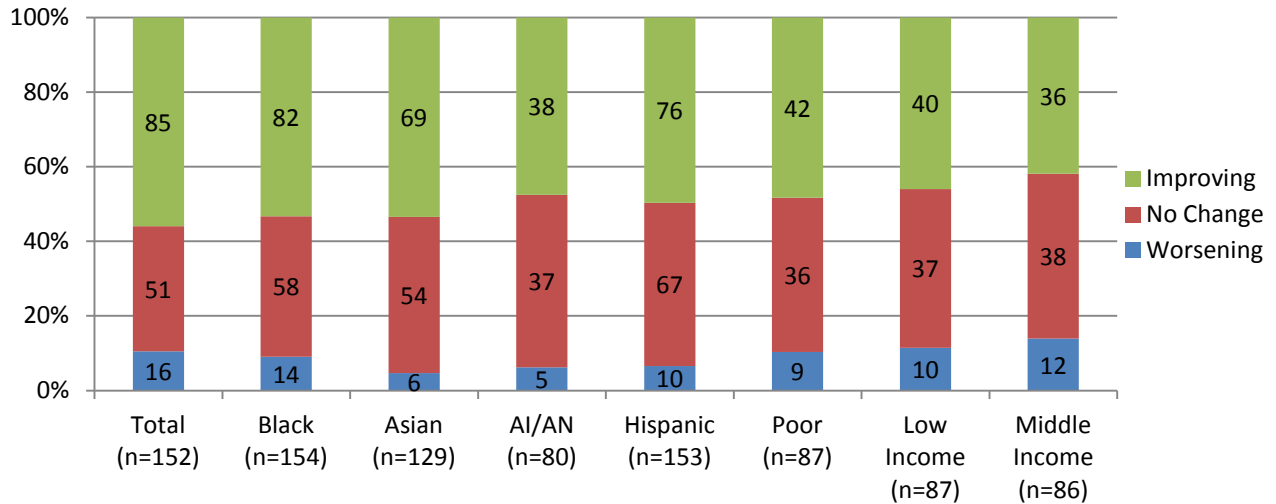
- **Problems with quality of care are decreasing while problems with access to care are increasing:**
 - In 2005, Americans failed to receive about 34% of health care services they should have received; by 2009, this had fallen to 30% of services (Figure H.3).
 - In 2002, 24% of Americans encountered difficulties accessing health care; by 2009, this had increased to 26% of Americans.

Another way to track the progress of health care quality and access presented in these reports is to calculate annual rates of change, which represent how quickly quality of and access to services delivered by the health care system are improving or declining. As in past reports, regression analysis is used to estimate annual rate of change for each measure. Annual rate of change is calculated only for measures with at least 4 years of data. For most measures, trends include data points from 2000-2002 to 2008-2010.

Weighted least squares regression is used to assess whether trends are statistically significant. Measures that are going in a favorable direction at a rate that exceeds 1% per year and is statistically significant are considered to be improving. Measures going in an unfavorable direction at a rate that exceeds 1% per year and is statistically significant are considered to be worsening. Measures that are changing at a rate that is less than 1% per year or is not statistically significant are considered to be static. Because of the addition of significance testing, this year's results cannot be compared with results in previous reports.

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Figure H.4. Number and proportion of all quality measures that are improving, not changing, or worsening, overall and for select populations



Key: AI/AN = American Indian or Alaska Native; n = number of measures.

Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.

No Change = Quality is not changing or is changing at an average annual rate less than 1% per year.

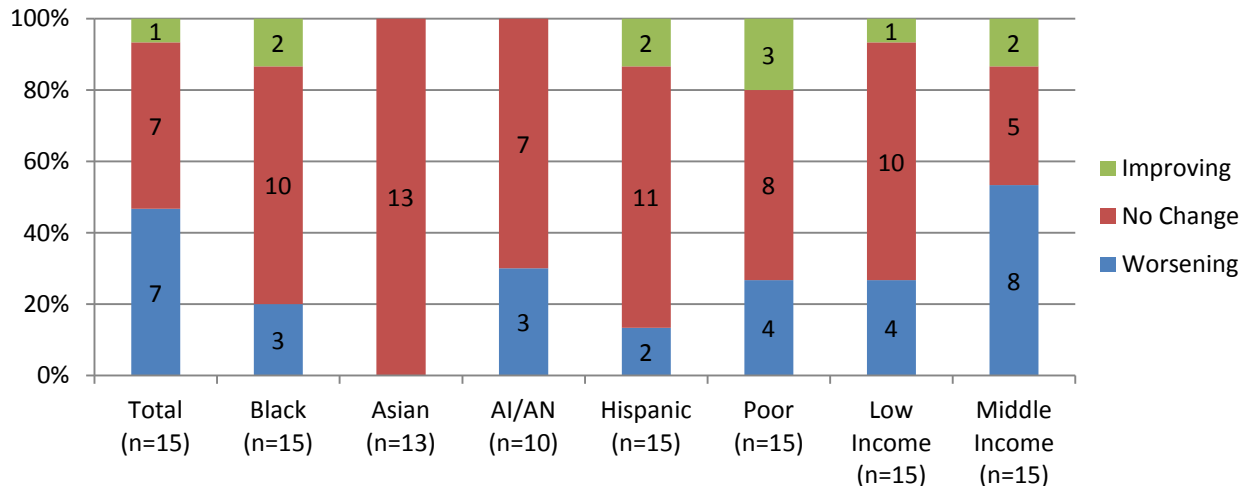
Worsening = Quality is going in a negative direction at an average annual rate greater than 1% per year.

Note: For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents trend data from 2000-2002 to 2008-2010.

- **Quality is improving slowly for all groups:**

- Across all measures of health care quality tracked in the reports, almost 60% showed improvement (Figure H.4).
- Improvement occurred among all racial, ethnic, and income groups.

Figure H.5. Number and proportion of all access measures that are improving, not changing, or worsening, overall and for select populations



Key: AI/AN = American Indian or Alaska Native; n = number of measures.

Improving = Access is going in a positive direction at an average annual rate greater than 1% per year.

No Change = Access is not changing or is changing at an average annual rate less than 1% per year.

Worsening = Access is going in a negative direction at an average annual rate greater than 1% per year.

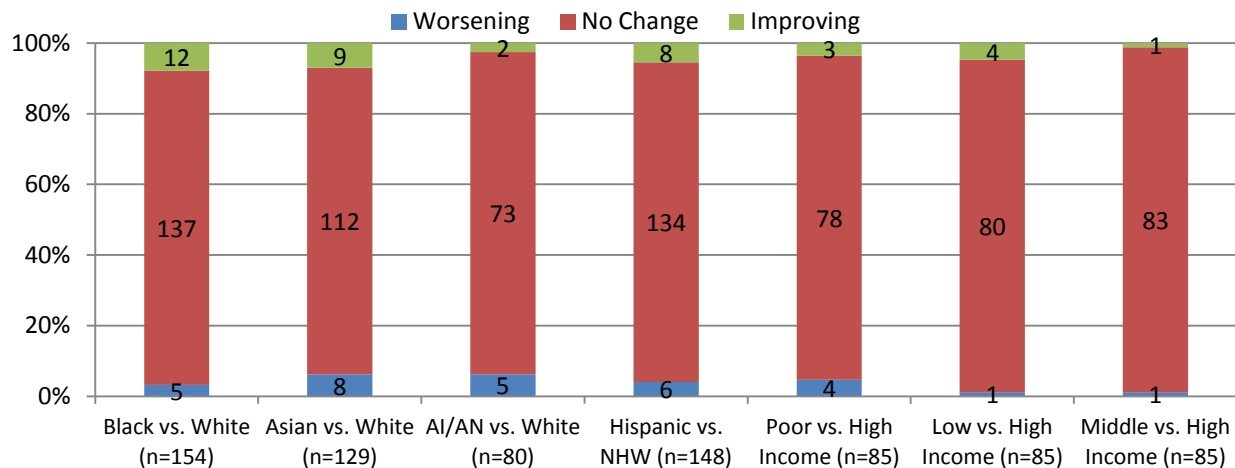
Note: For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents trend data from 2000-2002 to 2008-2010.

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- **Access is getting worse for most groups:**
 - Across the measures of health care access tracked in the reports, only one showed improvement and almost half were getting worse (Figure H.5).
 - For most racial, ethnic, and income groups, the number of access measures that were getting worse exceeded the number that were improving.

Weighted least squares regression was also used to assess change in disparities. When a selected group's rate of change is at least 1% higher than the reference group's rate of change and this difference in rates of change is statistically significant, we label the disparity as improving. When a selected group's rate of change is at least 1% lower than the reference group's rate of change and this difference in rates of change is statistically significant, we label the disparity as worsening. When the difference is less than 1% or is not statistically significant, we label the disparity as static.

Figure H.6. Number and proportion of all quality measures for which disparities related to race, ethnicity, and income are improving, not changing, or worsening



Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.

Improving = Disparity is getting smaller at a rate greater than 1% per year.

No Change = Disparity is not changing or is changing at a rate less than 1% per year.

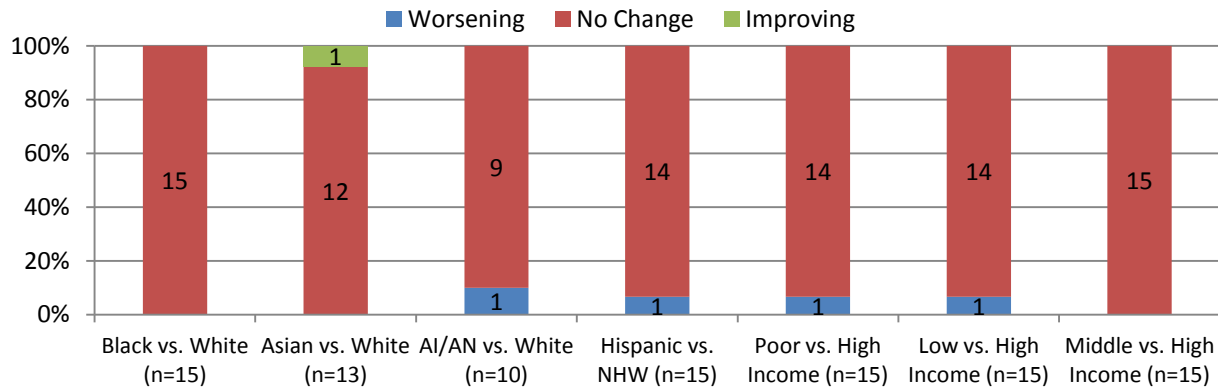
Worsening = Disparity is getting larger at a rate greater than 1% per year.

Note: For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents data on change in disparities from 2000-2002 to 2008-2010.

- **Few disparities in quality of care are improving (getting smaller):**
 - Few disparities in quality of care related to race, ethnicity, or income showed significant improvement, although the number of disparities that were getting smaller typically exceeded the number of disparities that were getting larger (Figure H.6).
 - Disparities that were getting smaller include differences between Hispanics and non-Hispanic Whites in rates of admission for congestive heart failure. Disparities that were getting larger include differences between Blacks and Whites in rates of advanced stage breast cancer.

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Figure H.7. Number and proportion of all access measures for which disparities related to race, ethnicity, and income are improving, not changing, or worsening



Key: AI/AN = American Indian or Alaska Native; NHW = non-Hispanic White; n = number of measures.

Improving = Disparity is getting smaller at a rate greater than 1% per year.

No Change = Disparity is not changing or is changing at a rate less than 1% per year.

Worsening = Disparity is getting larger at a rate greater than 1% per year.

Note: For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents data on change in disparities from 2000-2002 to 2008-2010.

- **Almost no disparities in access to care are improving (getting smaller):**
 - The gap in access between Asians and Whites improved (grew smaller) for one measure (people without a usual source of care who indicate a financial or insurance reason for not having a source of care). No other disparities in access to care showed improvement (Figure H.7).

Disparities Action Plan Priority: Increasing the Availability and Quality of Data Collected and Reported on Racial and Ethnic Minority Populations

Identifying problems, targeting resources, and designing interventions all depend on reliable data. Unfortunately, data on underserved populations are often incomplete. Some data sources do not collect information to identify specific groups. Other data sources collect this information, but the numbers of individuals from specific groups included are too small to allow reliable estimates. The HHS *Action Plan To Reduce Racial and Ethnic Health Disparities* (Disparities Action Plan; HHS, 2011) includes this priority as part of its goal to advance scientific knowledge and innovation in support of reducing health disparities.

Progress in Disparities Data

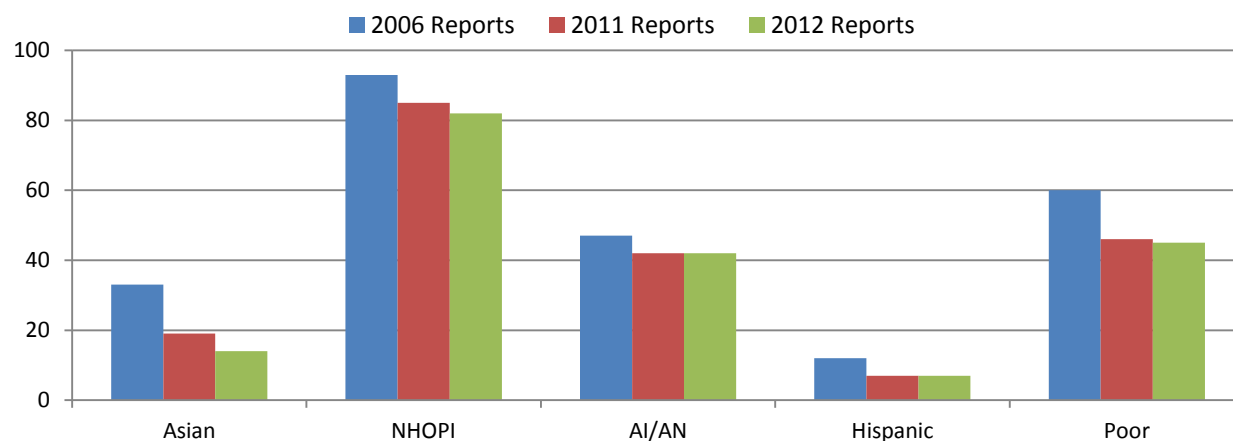
In the 2006 NHDR, we presented a chart showing the percentage of core quality measures for which an estimate that met our reliability criteria could not be generated for single-race Asians, Native Hawaiians and Other Pacific Islanders (NHOPIs), AI/ANs, multiple-race individuals, Hispanics, and poor people. Except for one measure related to language assistance,ⁱⁱⁱ all measures provided reliable estimates for Blacks, so they were not shown.

ⁱⁱⁱ The measure is the percentage of adults with limited English proficiency and a usual source of care who had language assistance.

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Below we include the percentage of all quality measures in the 2006, 2011, and 2012 reports for which a reliable estimate could not be generated for these same groups. Again, except for the one measure of language assistance, reliable estimates could be generated for Blacks for all other measures, so they are not shown.

Figure H.8. Percentage of quality measures in the 2006, 2011, and 2012 reports for which a reliable estimate could not be generated



Key: NHOPI = Native Hawaiian or Other Pacific Islander; AI/AN = American Indian or Alaska Native.

- **Data on disparities continue to improve but are still suboptimal:**

- Since 2006, the percentage of quality measures that could not be used to assess disparities has decreased for all groups (Figure H.8).
- For NHOPIs, reliable estimates were not available for more than three-quarters of the measures, making any assessment of disparities incomplete. Reliable estimates for AI/AN and poor populations also could not be generated for a large percentage of measures.

Nationwide Initiatives Increasing Data on Racial and Ethnic Minority Populations

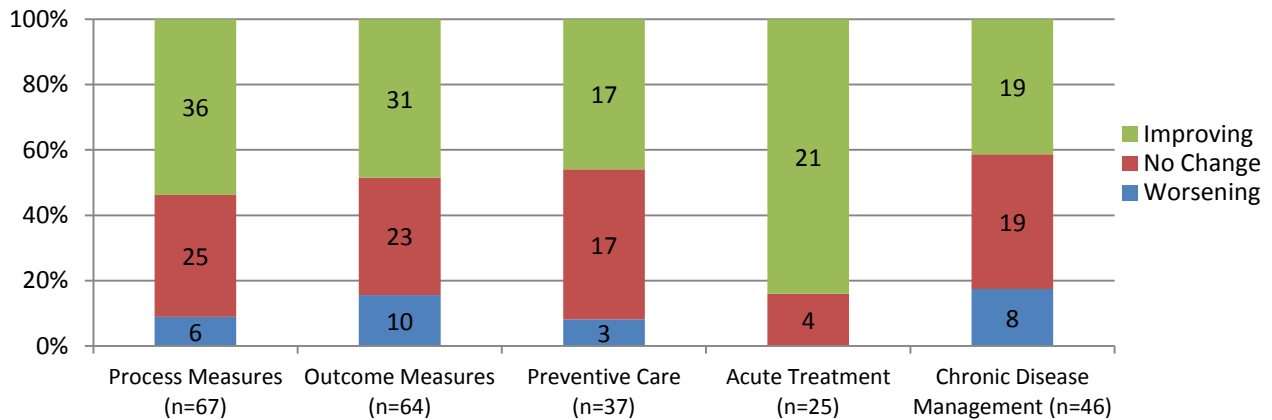
The Affordable Care Act requires that all federally funded health programs and population surveys collect and report data on race, ethnicity, sex, primary language, and disability and supports use of data to analyze and track health disparities (Andrulis, et al., 2010). To improve the quality of data collected in population surveys, HHS published Data Standards for Race, Ethnicity, Sex, Primary Language, and Disability in October 2011 (Office of Minority Health, 2011). New, more granular standards for race and ethnicity build and expand on the 1997 Office of Management and Budget data collection standards.

To strengthen data collection in Medicaid and Children's Health Insurance Programs, HHS evaluated these programs and recommended improvements in the report *Approaches for Identifying, Collecting, and Evaluating Data on Health Care Disparities in Medicaid and CHIP* (www.healthcare.gov/law/resources/reports/disparities09292011a.pdf). Recommendations include aligning the Medicaid Statistical Information System, Medicare Current Beneficiary Survey, and Consumer Assessment of Healthcare Providers and Systems with the new data standards.

Urgent Attention Is Warranted To Ensure Improvements in Quality and Success in Reducing Disparities

The third key function of these reports is to identify areas in greatest need of improvement. Potential problem areas can be defined by types of services and populations at risk. Pace of improvement varies across preventive care, acute treatment, and chronic disease management.

Figure H.9. Number and proportion of measures that are improving, not changing, or worsening, by type of quality measure



Key: n = number of measures.

Improving = Quality is going in a positive direction at an average annual rate greater than 1% per year.

No Change = Quality is not changing or is changing at an average annual rate less than 1% per year.

Worsening = Quality is going in a negative direction at an average annual rate greater than 1% per year.

Note: Preventive care includes screening, counseling, and vaccinations; acute treatment includes hospital care for cancer, heart attack, and pneumonia; chronic disease management includes ambulatory care for diabetes, arthritis, and asthma and nursing home care for pressure sores and pain. For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents trend data from 2000-2002 to 2008-2010.

- **Measures of acute treatment are improving; other measures are lagging:**
 - About half of all process and outcome measures showed improvement (Figure H.9).
 - Of the quality measures related to treatment of acute illness or injury, more than 80% showed improvement. In contrast, only about 40% of quality measures related to preventive care and chronic disease management showed improvement. Acute treatment includes a high proportion of hospital measures, many of which are tracked by the Centers for Medicare & Medicaid Services (CMS) and publicly reported. Hospitals often have more infrastructure to improve quality and to respond to performance measurement compared with providers in other settings.

The NHQR tracks the pace of change over time for measures with at least 4 years of data. Table H.1 lists the quality measures with the highest rates of improvement and deterioration.

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Table H.1. Quality measures with the most rapid pace of improvement and deterioration

Quality Improving	Quality Worsening
Adult surgery patients who had prophylactic antibiotics discontinued within 24 hours after surgery end time	Children ages 19-35 months who received 3 or more doses of <i>Haemophilus influenzae</i> type B vaccine
Adult surgery patients who received prophylactic antibiotics within 1 hour prior to surgical incision	Maternal deaths per 100,000 live births
Hospital patients with heart attack who received percutaneous coronary intervention within 90 minutes of arrival	Adults age 40+ with diagnosed diabetes who had their feet checked for sores or irritation in the calendar year
Hospital patients age 65+ with pneumonia who received a pneumococcal screening or vaccination	Postoperative pulmonary embolism or deep vein thrombosis per 1,000 surgical admissions, age 18+
Hospital patients age 50+ with pneumonia who received an influenza screening or vaccination	Admissions for asthma per 100,000 population, age 65+
Hospital patients with pneumonia who had blood cultures collected before antibiotics were administered	Adults age 40+ with diagnosed diabetes who received 2+ hemoglobin A1c measurements in the calendar year
Hospital patients with heart failure who were given complete written discharge instructions	Suicide deaths per 100,000 population
Hospital patients with heart failure and left ventricular systolic dysfunction who were prescribed ACE inhibitor or ARB at discharge	Women ages 21-65 who received a Pap smear in the last 3 years
Long-stay nursing home residents who were assessed and given pneumococcal vaccination	Admissions with stage III or IV pressure ulcer per 1,000 medical and surgical admissions of length 5+ days
Patients with colon cancer who received recommended treatment: surgical resection of colon specimen that had 12+ regional lymph nodes pathologically examined	Admissions with diabetes with short-term complications per 100,000 population, age 18+

Key: ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker.

Note: Orange = CMS publicly reported measures; yellow = maternal and child health measures; blue = diabetes measures; purple = adverse events. For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents trend data from 2000-2002 to 2008-2010.

- **Quality changes unevenly across measures:**

- Of the 10 quality measures that are improving at the fastest pace, 9 are CMS publicly reported measures (orange) (Table H.1).
- Of the 10 quality measures that are getting worse at the fastest pace, 3 relate to diabetes (blue), 2 relate to maternal and child health (yellow), and 2 relate to adverse events in health care facilities (purple).

The NHDR focuses on disparities related to race, ethnicity, and socioeconomic status. Table H.2 summarizes the disparities for each major group tracked in the reports. For each group, it shows the measures where disparities are improving at the fastest rate and the measures where disparities favor the comparison group and are worsening.

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Table H.2. Disparities that are changing over time

Groups	Disparities Improving	Disparities Worsening
Black compared with White	Admissions for congestive heart failure per 100,000 population, age 18+	Advanced stage invasive breast cancer incidence per 100,000 women age 40+
	Adjusted incidence of end stage renal disease due to diabetes per million population	Maternal deaths per 100,000 live births
	Short-stay nursing home residents who were assessed and given pneumococcal vaccination	
Asian compared with White	Hospital patients age 65+ with pneumonia who received a pneumococcal screening or vaccination	Adjusted incidence of end stage renal disease due to diabetes per million population
	Hospital patients age 50+ with pneumonia who received an influenza screening or vaccination	Hospice patients who received the right amount of help for feelings of anxiety or sadness
	Hospital patients with heart failure who were given complete written discharge instructions	Adults ages 18-64 at high risk (e.g., COPD) who ever received pneumococcal vaccination
American Indian/ Alaska Native compared with White	Adjusted incidence of end stage renal disease due to diabetes per million population	Hospital patients with heart failure and left ventricular systolic dysfunction who were prescribed ACE inhibitor or ARB at discharge
	Children who had their height and weight measured by a health provider within the past 2 years	Adults age 50+ who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
Hispanic compared with Non-Hispanic White	Admissions for congestive heart failure per 100,000 population, age 18+	Home health care patients who have less shortness of breath
	Hospital patients age 65+ with pneumonia who received a pneumococcal screening or vaccination	Adults age 40+ with diagnosed diabetes who received 2+ hemoglobin A1c measurements in the calendar year
	Hospital patients age 50+ with pneumonia who received an influenza screening or vaccination	Hospital patients with heart attack who received fibrinolytic medication within 30 minutes of arrival
Poor compared with High Income	Admissions for congestive heart failure per 100,000 population, age 18+	People without a usual source of care who indicate a financial or insurance reason for not having a source of care
	Deaths per 1,000 hospital admissions with abdominal aortic aneurysm repair, age 18+	Adults age 50+ who ever received a colonoscopy, sigmoidoscopy, or proctoscopy
	Children ages 2-17 who had a dental visit in the calendar year	Admissions with diabetes with short-term complications per 100,000 population, age 18+

Key: COPD = chronic obstructive pulmonary disease; ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker.

Note: Orange = CMS publicly reported vaccination measures; purple = cardiovascular disease measures; red = cancer measures; blue = diabetes measures; yellow = maternal and child health measures. For each measure, the earliest and most recent data available to our team were analyzed; for the vast majority of measures, this represents data on change in disparities from 2000-2002 to 2008-2010.

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- **Disparities also change unevenly across measures:**
 - Of the disparities that are improving, 5 are CMS publicly reported vaccination measures (orange) and 5 relate to cardiovascular disease (purple) (Table H.2).
 - Of the disparities that favor the comparison group and are getting worse, 3 relate to cancer (red).
 - Measures related to diabetes (blue) and maternal and child health (yellow) showed mixed patterns, with some disparities improving and others worsening.

Quality of care varies not only across types of care but also across parts of the country. Knowing where to focus efforts improves the efficiency of interventions. Delivering data that can be used for local benchmarking and improvement is a key step in raising awareness and driving quality improvement.

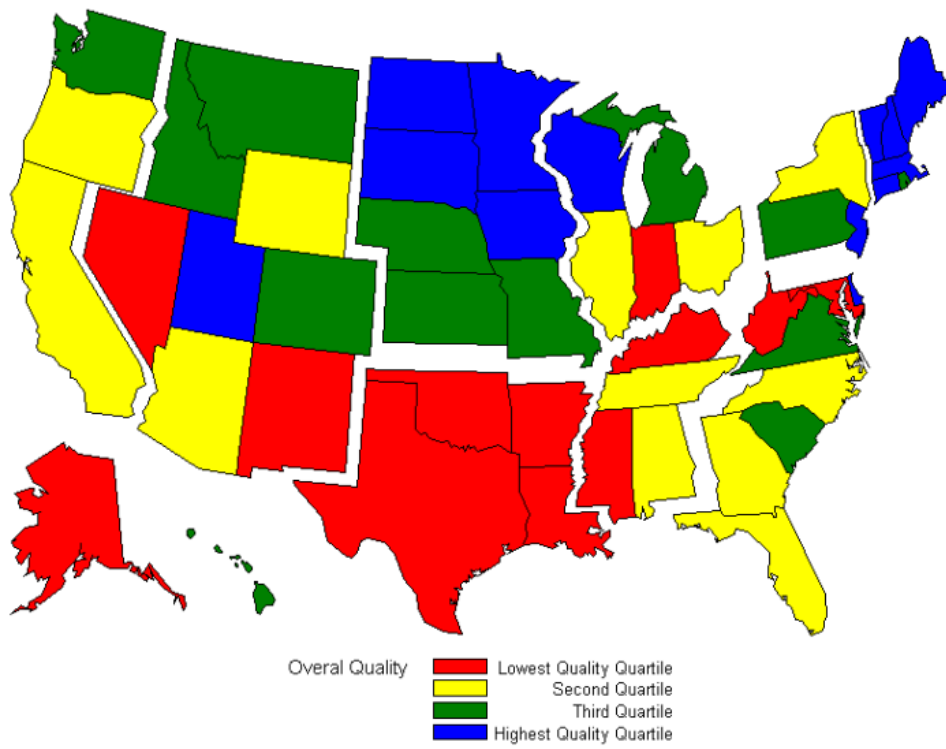
Since 2005, AHRQ has used the State Snapshots tool (statesnapshots.ahrq.gov) to examine variation across states. This Web site helps state health leaders, researchers, consumers, and others understand the status of health care quality in individual states and the District of Columbia.

The State Snapshots are based on more than 100 NHQR measures, each of which evaluates a different aspect of health care performance and shows each state's strengths and weaknesses. Here, we use data from the 2011 State Snapshots to examine variation in quality across states.

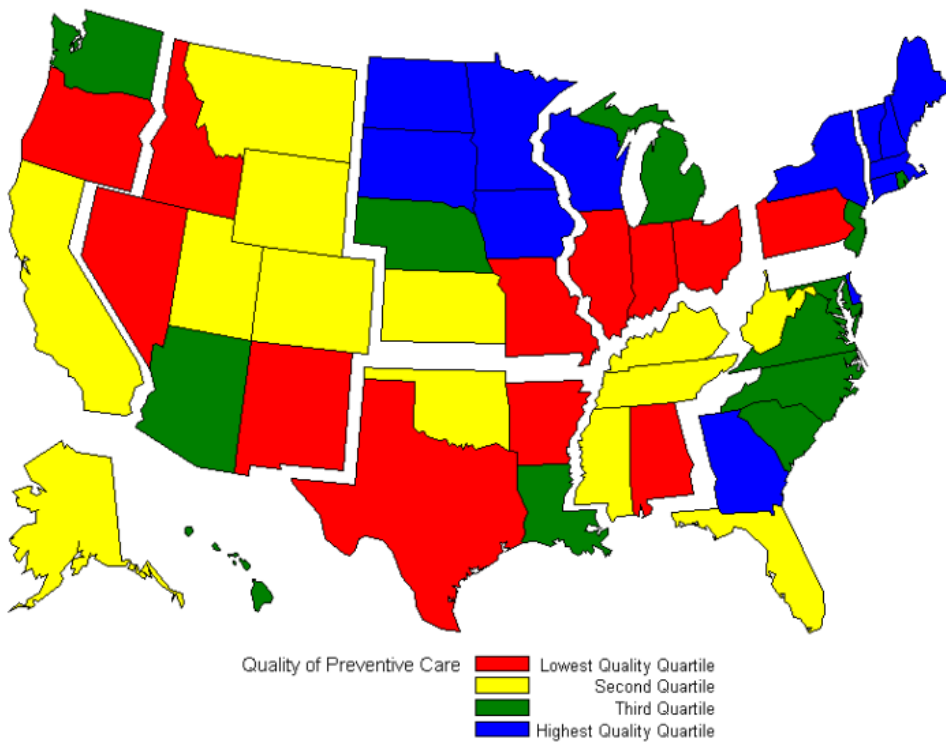
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Figure H.10. Overall quality of care, preventive care, acute care, and chronic care, by state

Overall Quality of Care

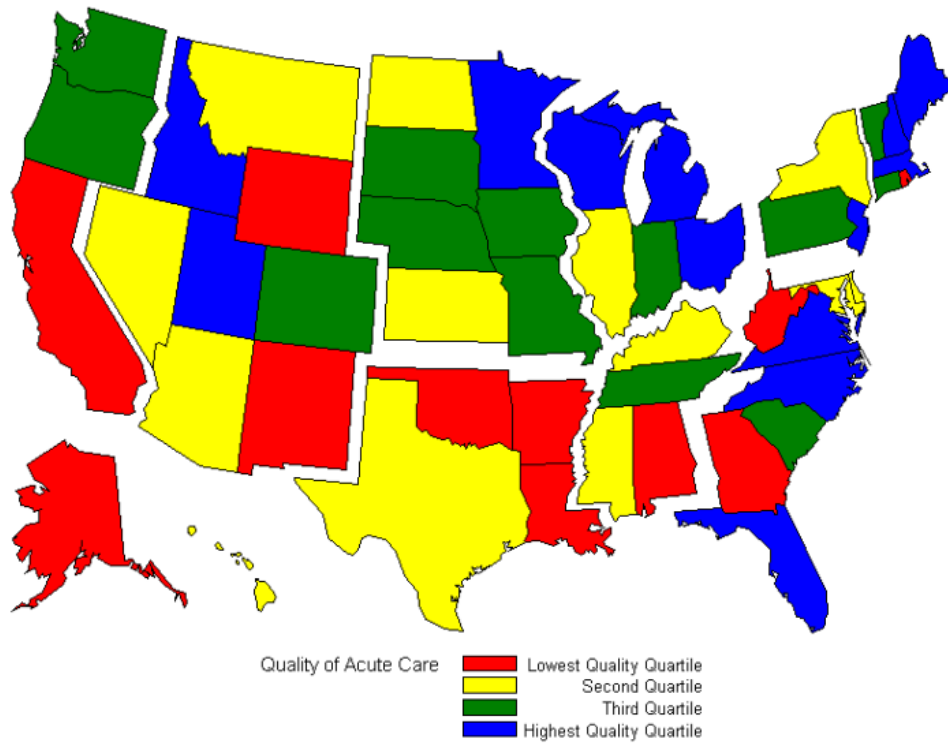


Preventive Care

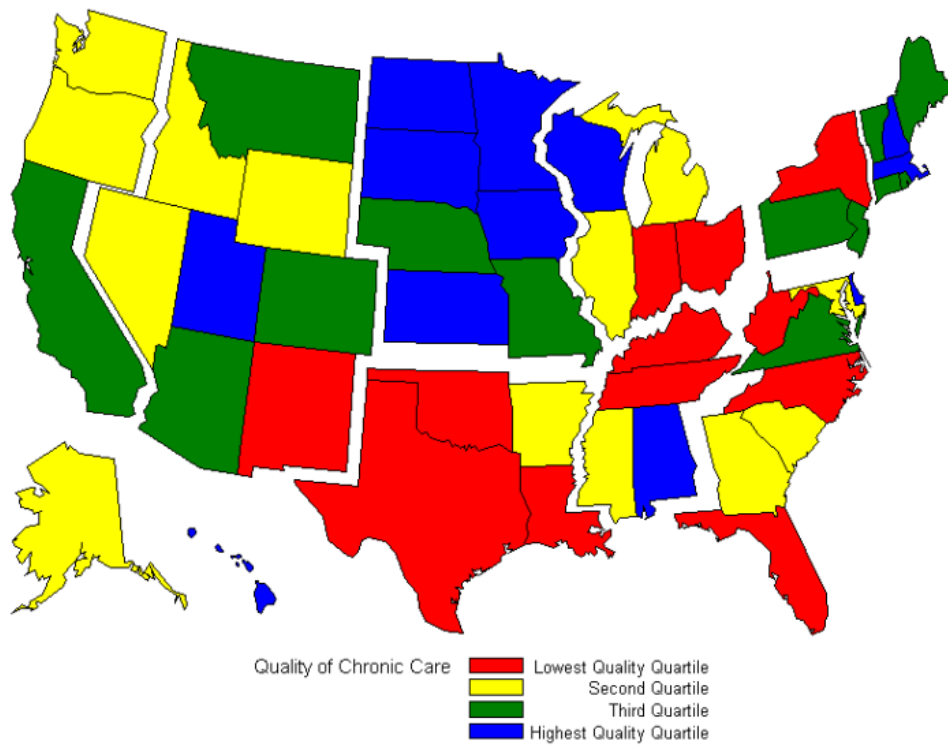


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Acute Care



Chronic Care



Source: Agency for Healthcare Research and Quality, 2011 State Snapshots.

Note: States are divided into quartiles based on overall health care score.

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- **Quality of care differs across geographic regions:**

- For overall quality of care, states in the New England (CT, MA, ME, NH, RI, VT) and West North Central (IA, KS, MN, MO, NE, ND, SD) census divisions were most often in the top quartile (Figure H.10). States in the South Atlantic (DC [not shown], DE, FL, GA, MD, NC, SC, VA, WV), East South Central (AL, KY, MS, TN), and West South Central (AR, LA, OK, TX) census divisions were most often in the bottom quartile.
- States in different parts of the country faced different patterns of health care quality.
 - States in the New England and West North Central divisions performed well on preventive, acute, and chronic care quality measures while states in the East South Central and West South Central divisions performed poorly on all three types of services.
 - States in the Mountain division (AZ, CO, ID, MT, NV, NM, UT, WY) performed poorly on preventive and acute care.
 - States in the East North Central (IL, IN, MI, OH, WI) division performed well on acute care but poorly on chronic care.
 - States in the South Atlantic census division performed well on preventive care but poorly on chronic care.

Conclusion

The NHQR and NHDR track health care quality and disparities at the national level, but the statistics reported in the reports reflect the aggregated everyday experiences of patients and their providers across the Nation. Improving quality and reducing disparities require measurement and reporting, as provided in the NHQR and NHDR. These statistics, however, are only useful to the extent that they inform policies and initiatives and help us track progress toward the ultimate goal of HHS initiatives, which is to improve the lives of patients and families.

It makes a difference in people's lives when breast cancer is diagnosed early; when a patient having a heart attack gets the correct lifesaving treatment in a timely fashion; when medications are correctly administered; and when doctors listen to their patients and their families, show them respect, and answer their questions in a culturally and linguistically skilled manner. All Americans should have access to quality care that helps them achieve the best possible health.

With the publication of this 10th NHQR and NHDR, AHRQ stands ready to contribute to efforts that encourage and support the development of national, state, tribal, and local solutions using national data and achievable benchmarks of care. These documents identify areas where novel strategies have made a difference in improving patients' quality of life, as well as many areas where much more should be done.

We need to improve access to care, reduce disparities, and accelerate the pace of quality improvement, especially in the areas of preventive care and safety. More data are needed to assess progress in care coordination and efficiency. Information needs to be shared with partners who have the skills and commitment to change health care. Building on data in the NHQR, NHDR, and State Snapshots, stakeholders can design and target strategies and clinical interventions to ensure that all patients receive the high-quality care needed to make their lives better.

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Chapter 1. Introduction and Methods

In 1999, Congress directed the Agency for Healthcare Research and Quality (AHRQ) to produce an annual report on “national trends in the quality of health care provided to the American people.”ⁱ With support from the Department of Health and Human Services (HHS) and private-sector partners, AHRQ has designed and produced the *National Healthcare Quality Report* (NHQR) to respond to this legislative mandate. The NHQR provides a comprehensive overview of the quality of health care received by the general U.S. population and is designed to summarize data across a wide range of patient needs—staying healthy, getting better, living with chronic illness and disability, and coping with the end of life.

AHRQ was further tasked with producing an annual report that tracks “prevailing disparities in health care delivery as it relates to racial factors and socioeconomic factors in priority populations.”ⁱⁱ Titled the *National Healthcare Disparities Report* (NHDR), this report examines disparities in health care received by designated priority populations. The referenced priority populations consist of groups with unique health care needs or issues that require special focus, such as racial and ethnic minorities, low-income populations, and people with special health care needs. AHRQ’s charge includes a directive to examine disparities in health care access, utilization, costs, outcomes, satisfaction, and perceptions of care.

The first NHQR and NHDR were significantly shaped by several Institute of Medicine (IOM) reports. *Crossing the Quality Chasm* (IOM, 2001) and *To Err Is Human* (IOM, 2000) raised awareness about gaps in the quality of health care and patient safety. The extensive literature review included in the IOM report *Unequal Treatment* (IOM, 2003) drew attention to disparities in the care rendered to racial and ethnic populations, low-income populations, and other vulnerable groups. The IOM report *U.S. Health in International Perspective: Shorter Lives, Poorer Health* (IOM, 2010) reflects inefficiencies and disparities in the US health care system.

With support from an HHS Interagency Work Group and AHRQ’s National Advisory Council, AHRQ has designed and produced the NHQR and NHDR since 2003. This is the 10th in the series of reports.

Changes to the Reports

Over the past decade AHRQ has introduced several refinements to the NHQR and NHDR measure set and methodology:

- 2003: Reports were introduced.
- 2004: Goal of the reports was expanded to include tracking of the Nation’s quality improvement progress.
- 2005: Reports introduced a set of core measures and several new composite measures.
- 2006: Data sources were added and the methods for quantifying and tracking changes in health care were refined.
- 2007: Chapter on health care efficiency was launched.

ⁱ 42 U.S.C. 299b-2(b)(2).

ⁱⁱ 42 U.S.C. 299a-1(a)(6).

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- 2008: Chapter on patient safety was expanded. AHRQ commissioned the IOM to review past reports and offer recommendations for enhancing future reports and associated products.
- 2009: New sections were included on lifestyle modification, healthcare-associated infection, patient safety culture, care coordination, and potentially avoidable hospitalizations among patients in home health and nursing facilities.
- 2010: Per IOM recommendations (IOM, 2010), reports focused on areas expected to yield the greatest gains in health care quality, including patient and family engagement, population health, safety, care coordination, palliative care, overuse of services, access to care, and health system infrastructure. Measure-specific benchmarks that reflected the highest level of performance documented for a measure were added.
- 2011: Pursuant to the provisions of the Patient Protection and Affordable Care Act of 2010,ⁱⁱⁱ the Secretary of HHS submitted a report to Congress titled *National Strategy for Quality Improvement in Health Care* (National Quality Strategy, HHS, 2011).^{iv} This report set priorities to advance three quality improvement aims: better care, healthy people, and affordable care. As the National Quality Strategy priorities considerably overlap with those proposed by the IOM, the 2011 reports were aligned with the National Quality Strategy. Additional measures to reflect the National Quality Strategy priorities were added to the reports.

The 2012 NHQR and NHDR continue to align measures according to the National Quality Strategy in an effort to inform policymakers, the public, and other stakeholders of the Nation's progress in achieving National Quality Strategy aims. Featured in the 2012 reports are measures and analyses that focus on (1) long-term trends in performance, (2) regional and State differences in quality, and (3) health care disparities for granular ethnicity categories, which consist of more specific levels of categorization of population subgroups.

Organization of the NHQR and NHDR

The NHQR and NHDR are designed as chartbooks that contain data on more than 250 health care quality measures from more than 45 databases. Measures in these reports are selected with guidance from the AHRQ Interagency Work Group, an advisory body of representatives from across many HHS agencies. Measures represented in these reports are among the most important and scientifically-supported measures. Together, these measures provide an annual snapshot of how our Nation's health care system is performing and the extent to which health care quality and disparities have improved or worsened over time.

ⁱⁱⁱ Public Law 111-148.

^{iv} The National Quality Strategy identified six priority areas as a means to achieve the quality improvement aims. These include: (1) making sure care is safer by reducing harm in the delivery of care; (2) ensuring that each person and family is engaged as partners in their care; (3) promoting effective communication and coordination of care; (4) promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease; (5) working with communities to promote wide use of best practices to enable healthy living; and (6) making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models.

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The NHQR and NHDR are complementary reports and, with few exceptions, are similarly organized. Where applicable, key findings from the NHDR are included in the NHQR, and NHQR findings are reported in the text of the NHDR. Readers should refer to the report from which results have been drawn to gather additional details on the data presented. Report chapters include the following:

Highlights, which immediately precede the current chapter, combines broad sets of measures to offer a high-level overview of the progress that has been made in advancing health care quality and reducing disparities in the United States. The Highlights chapter incorporates findings from both the NHQR and NHDR and the same Highlights chapter is used in both reports.

Chapter 1: Introduction and Methods provides background on the NHQR and NHDR and modifications to the reports that have occurred over time. This chapter includes measures that have been added or retired from the measure list, along with an overview of the methods used to generate estimates, measure trends, and examine disparities.

Chapter 2: Effectiveness examines prevention, treatment, and outcomes for a range of conditions or population groups. The 2012 reports are organized around several clinical areas: cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV and AIDS, maternal and child health, mental health and substance abuse, musculoskeletal disease, and respiratory disease. Three types of health care services that typically cut across clinical conditions are also examined: lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care.

Chapter 3: Patient Safety tracks safety within hospitals. Among the areas examined are healthcare-associated infections, postoperative and other hospital complications, and preventable hospital deaths.

Chapter 4: Timeliness examines the delivery of time-sensitive clinical care and patient perceptions of how quickly they receive care. Among the measures reported in this chapter are the ability to get care when the patient needs it and emergency department wait times.

Chapter 5: Patient Centeredness examines individual experiences with care in an office or clinic setting, as well as during a hospital stay. Measures reported in this chapter focus on perceptions of communication with providers and satisfaction with the physician-patient relationship.

Chapter 6: Care Coordination presents data to assess the performance of the U.S. health care system in coordinating care across providers or services. Care coordination is measured, in part, using readmission measures as well as measures of success in transitioning across health care settings.

Chapter 7: Efficiency discusses how well the health care system promotes quality, affordable care, and appropriate use of services. The emphasis in this chapter is on overuse of health services, as measures representing misuse or underuse overlap with other sections of the report and are included in various chapters.

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Chapter 8: Health System Infrastructure explores the capacity of health care systems to support high-quality care. Most measures of health system infrastructure were assessed on the basis of region or provider characteristics. Infrastructure measures, which are primarily structural measures of quality, include adoption of computerized data systems and the supply of selected health care professionals.

Chapter 9: Access presents measures that cut across several priority areas and includes measures that focus on barriers to care, such as lack of insurance, financial barriers to care experienced by the population with health insurance, and usual source of care.

Chapter 10: Priority Populations continues to be unique to the NHDR. This chapter summarizes quality and disparities in care for populations identified as particularly significant to quality improvement, including racial and ethnic minorities, low-income populations, older adults, residents of rural areas, and individuals with disabilities or special health care needs.

Appendixes are available online for both the NHQR and NHDR at <http://www.ahrq.gov/research/findings/nhqrdr/index.html>. These include:

- **Data Sources**, which provides information about each database analyzed for the reports, including data type, sample design, and primary content.
- **Measure Specifications**, which provides information about how measures are generated and analyzed for the reports. Measures highlighted in the report are described, as well as other measures that were examined but not included in the text of the report.
- **Detailed Methods**, which provides detailed methodological and statistical information about selected databases analyzed for the reports.
- **Data Tables**, which contains detailed data tables for most measures analyzed for the reports, including measures highlighted in the report text and measures examined but not included in the text. A few measures cannot support detailed tables and are not included in the appendix.

Table 1.1 provides a crosswalk between the National Quality Strategy priorities and the report chapters. Chapter 10, Priority Populations, addresses all six priorities.

Table 1.1. Alignment of NHQR and NHDR chapters to National Quality Strategy priorities

Priority	NHQR and NHDR Chapters Addressing Priority
Making sure care is safer by reducing harm in the delivery of care	Chapter 3: Patient Safety
Ensuring that each person and family is engaged as partners in their care	Chapter 5: Patient Centeredness
Promoting effective communication and coordination of care	Chapter 6: Care Coordination
Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease	Chapter 2: Effectiveness, Cardiovascular Disease
Working with communities to promote wide use of best practices to enable healthy living	Chapter 2: Effectiveness, Lifestyle Modification

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Priority	NHQR and NHDR Chapters Addressing Priority
Making quality care more affordable for individuals, families, employers, and governments, by developing and spreading new health care delivery models	Chapter 7: Efficiency Chapter 9: Access

Measure Set for the 2012 NHQR and NHDR

The 2012 reports continue to focus on a consistent subset of measures, the “core” measures, which includes the most important and scientifically-supported measures in the full measure set. “Supporting measures” are included in summary statistics and may be presented to complement core measures in key areas. Often, data are unavailable to track these measures on an annual basis. In other cases, supporting measures may not have been as rigorously evaluated as core measures, but they are still useful in characterizing the performance of the health care system.

Core Measures

In 2005, the Interagency Work Group selected core measures from the full measure set. Consistency in core measures enables AHRQ to monitor trends over time to identify areas for which health care is improving or getting worse. For most core measures, findings are presented each year.

A subset of the core measure group is presented on an alternating basis, typically rotating across odd or even years of the report. All alternating core measures are included in trend analyses. Examples of alternating measures include the set of measures focusing on breast cancer and colorectal cancer. While measures are tracked annually, breast cancer measures are presented in odd calendar years; these measures are contained in the 2011 reports. Colorectal cancer measures are also tracked annually, but results are presented in even calendar years, such as in the 2010 quality and disparities reports.

New Measures

With the assistance of the Interagency Work Group, each year AHRQ reviews the NHQR and NHDR measure list to identify areas where additional information on the performance of the health care system is needed. Suitability of a measure for reporting may be based on the adequacy of data used to generate the measure, extent to which the measure has been scientifically tested, and acceptance of the measure by relevant stakeholders. New measures, which are listed in Table 1.2, were presented to and approved by the members of the Interagency Work Group for inclusion in the 2012 reports.

Table 1.2. New measures in NHQR/NHDR, 2012

Chapter	Measure	Data Source
Effectiveness: Asthma	People with current asthma who received a written asthma management plan from their health provider	National Health Interview Survey
*Effectiveness: Cancer	Adults ages 50-75 who reported having colorectal cancer screening	National Center for Health Statistics
*Effectiveness: Mental Health and Substance Abuse	Suicide deaths per 100,000 population, age 12 and over	National Center for Health Statistics

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Chapter	Measure	Data Source
Effectiveness: Functional Status and Rehabilitation	Gain in functioning between admission and discharge from inpatient medical rehabilitation	Inpatient Rehabilitation Facility Patient Assessment Instrument
Patient Safety	Central line-associated bloodstream infections	National Healthcare Safety Network
Patient Safety	Rate of hospital-acquired conditions	Medicare Patient Safety Monitoring System
Care Coordination	Effective care coordination among children with special health care needs	National Survey of Children With Special Health Care Needs
Care Coordination	Children with special health care needs who have a medical home	National Survey of Children With Special Health Care Needs

* Existing measure with new specifications.

Retired Measures

Since the first NHQR and NHDR, significant improvements in a number of measures of quality of care have occurred, with U.S. health care providers achieving overall performance levels exceeding 95%. The success of these measures limits their utility for tracking improvement over time. Because these measures cannot improve to a significant degree, including them in the measure set creates a ceiling effect that may distort quantification of rate of change over time.

Each year, measures for which performance has reached 95% are retired. Data on retired measures will continue to be collected and these measures will be added back to the reports if their performance falls below 95%.

Measures may also be retired if a more suitable measure is identified. Suitability is determined on the basis of scientific testing, measure acceptance, and availability of valid and reliable data to construct the measure.

Two patient safety measures were retired in 2012, because performance had reached the 95% threshold:

- Surgical patients' receipt of appropriate care.
- Appropriate timing of antibiotics for surgical patients.

Composite Measures

Policymakers and others have voiced support for composite measures of quality because they can be used to facilitate understanding of information from many different measures. A composite measure summarizes care represented by individual measures that are often related in some way, such as components of care for a particular disease or illness. Composite measures are composed of two or more measures that have been recommended or identified as a "best practice" in the treatment or prevention of complications associated with specific conditions.

Since measures used to construct composites represent various dimensions or processes of care, they provide a more complete understanding of the quality of the U.S. health care system. To

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ensure that actionable information is available, estimates of performance on the individual measures that make up a composite measure are available in the Data Tables appendix.

Decisions concerning the appropriateness of pooling data to generate a composite measure were discussed with data sources. Several of the composite measures included in the reports were developed, tested, and estimated by the data source or other public or private organizations for use in quality assessment, monitoring, and improvement activities.

Composite measures in the NHQR and NHDR are created in several ways. The appropriateness model is sometimes referred to as the “all or none” approach because it is calculated based on the number of patients who received all of the services they needed. One example of this model is the diabetes composite, in which a patient who does not receive all four recommended services (two hemoglobin A1c tests, a foot exam, an exam to detect diabetic retinopathy, and a flu shot) would not be counted as having received all recommended care.

The opportunities model assumes that each patient needs and has the opportunity to receive one or more processes of care, but not all patients need the same care. Composite measures that use this model summarize the proportion of appropriate care that is delivered. The denominator for an opportunities model composite is the sum of opportunities to receive appropriate care across a panel of process measures. The numerator is the sum of the components of appropriate care that are actually delivered.

The composite measure of recommended hospital care for pneumonia is an example of the use of the opportunities model. The total number of patients who receive treatment represented by individual components of the composite measure (e.g., blood culture collected before antibiotic treatment, initial antibiotic dose received within 6 hours of hospital arrival, influenza or pneumonia screening or vaccination) is divided by the sum of all of the opportunities to receive appropriate care.

The CAHPS[®] (Consumer Assessment of Healthcare Providers and Systems) surveys have their own method for computing composite measures that has been in use for many years. These composite measures average individual components of patient experiences of care and are presented as the proportion of respondents who indicate that providers or systems sometimes or never, usually, or always performed well.

Two composite measures pertaining to patient safety are postoperative complications and complications from central venous catheters. For these composites, an additive model is used that sums individual complication rates. Thus, the numerator is the sum of individual complications and the denominator is the number of patients at risk for these complications. The composite rates are presented as the overall rate of complications. For example, for postoperative complications, if 100 patients had a total of 30 complications among them (regardless of their distribution), the composite score would be 30%.

Analyses

In the NHQR, measures are tracked for different groups, such as age, gender, and geographic location. In the NHDR, comparisons are made across groups defined by race, ethnicity, income, education, activity limitations, and geographic location. In general, either the largest subgroup or

the best performing subgroup is used as the reference group. Unless specified, the reference group is individuals ages 18-44 for age comparisons, individuals with private health insurance for insurance comparisons, and non-Hispanic Whites for racial and ethnic comparisons.

Size of Disparities Across Groups

Two criteria are applied to determine whether the difference between two groups is meaningful:

- First, the difference between the two groups must be statistically significant with $p < 0.05$ on a two-tailed test.
- Second, the relative difference between the comparison group and the reference group must have an absolute value of at least 10%.

Adjusted percentages, which quantify the magnitude of disparities after controlling for a number of confounding factors, were generated for several measures in the Effectiveness and Access chapters of the NHDR. In examining the relationship between race and ethnicity, for example, multivariate regression analyses were performed to control for differences in the distributions of income, education, insurance, age, gender, and geographic location.

Trend Analyses

Prior to the 2011 report a log-linear regression analysis was conducted to estimate average annual rate of change.^v Historically, progress on individual measures was reported based solely on the magnitude of the annual rate of change. Progress on a measure was deemed to be improving if the annual rate of change was 1% or greater in the desirable direction. Progress on a measure was deemed to be getting worse when the annual rate of change was 1% or greater in the undesirable direction.

This approach is limited by the fact that, depending on the type of measure and the size of the standard error, a 1% difference may not be particularly meaningful. For instance, measures generated from administrative records (such as discharge data), which tend to have thousands or even millions of records, usually have smaller variances than other types of measures, such as those from surveys.

The traditional approach for determining whether progress on a measure has been made does not consider the magnitude of error around an estimate and no mechanism to ascertain whether such a change could have occurred by chance is used in making determinations about progress. It is therefore possible that while a measure may meet the 1% threshold, annual rates of change may not be significant.

Data used for trending are aggregate or average estimates for a measure, with data collected for a minimum of 4 data points (years) covering periods between 2000 and 2011. As such, trend analyses are generally conducted with a small number of observations. The level of precision across these points may be nonconstant, or heteroskedastic. Ideally, values with lower variances,

^v Regression models were specified as follows: $\ln(M) = \beta_0 + \beta_1(Y)$, where $\ln(M)$ = natural logarithm of the measure value (M); β_0 = intercept or constant; $\beta_1(Y)$ = coefficient corresponding to year (Y). The average annual rate of change was calculated as $100 \times (\exp(\beta_1) - 1)$.

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indicative of greater precision, would be weighted more heavily than estimates with higher variances, or lower precision.

Beginning with the 2011 report, we identified and tested options for strengthening trend analyses by addressing heteroskedasticity or the amount of uncertainty around an estimate. A weighted log-linear model, where data points with lower variances are weighted more heavily than those with greater variances, as indicated below, was found to improve model fit.

Model: $\ln(M) = \beta_0 + \beta_1 Y$, where $\ln(M)$ is the natural logarithm of the measure value, β_0 is the intercept or constant, and β_1 is the coefficient corresponding to year Y

Weight: $w = (M^2/v)$, where M^2 is the square of the measure value and v is the variance

Progress on individual measures was determined as follows:

- Progress on a measure is deemed to be improving if the average annual rate of change is 1% or greater in the desirable direction, and $p < 0.10$.^{vi}
- Progress on a measure is deemed to be getting worse when the average annual rate of change is 1% or greater in the undesirable direction, and $p < 0.10$.
- Progress is determined to have remained the same if the average annual rate of change is $\leq 1\%$ in either the desirable or undesirable direction or $p > 0.10$.

Trends in Disparities in Population Subgroups

Across subpopulation groups, the absolute annual rate of change was estimated to ascertain the extent to which disparities in quality and access measures were increasing, decreasing, or remaining the same over time. As shown below, calculation of change in subgroup disparities was conducted in a manner similar to that described above, except that a linear regression model was used in the analyses.

Model: $M = \beta_0 + \beta_1 Y$, where M is the value of the measure, β_0 is the intercept or constant, and β_1 is the coefficient corresponding to year Y

Weight: $w = (1/v)$, where v is the variance

The difference in annual rate of change for the comparison group relative to the reference group was estimated. Determinations of whether subgroup differences have grown, narrowed, or remained the same were based on estimated differences in annual rate of change as specified below:

- Subgroup differences are deemed to be narrowing if the change in disparities is less than -1 and $p < 0.10$.

^{vi} A probability of 0.10 was selected as the significance level because the magnitude of the standard errors varied considerably by type of data.

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- Subgroup differences are deemed to be growing if the change in disparities is greater than 1 and $p < 0.10$.
- Subgroup differences are deemed to have remained the same if the change in disparities is between -1 and 1 , or $p > 0.10$.

Only those measures with 4 or more years of data were included in this trending analysis. Due to methodological changes in trending analysis, it is not appropriate to compare the annual change or rates of change for measure subgroups estimated with this method to those estimated prior to the 2011 report.

Benchmarking Strategy

Measure-specific benchmarks, which were first incorporated into the NHQR and NHDR in 2010, are also included in the 2012 reports. Benchmarks reflect the highest level of performance documented for individual measures, with performance assessed at the State level. Benchmarks enable readers to assess national performance on a measure relative to that of the highest performing States. They also aid in establishing reasonable performance improvement goals.

From an equity perspective, standards of performance should not differ across population groups. As such, benchmarks corresponding to measures included in both the NHQR and NHDR were identical. Benchmarks were estimated for the subset of measures for which State data were available. With few exceptions, values of benchmarks estimated in 2010 (which were based on 2008 data) have been carried over to the 2012 reports. These exceptions include measures for which the benchmark has been reached. For this small number of measures, which are identified in the relevant chapters of the reports, 2010 data are used to construct new benchmarks.

For measures for which State-level data were available, benchmarks were estimated as the average value for the 10% of States that had the best performance on the measure of interest. For benchmarking purposes, the District of Columbia is treated as a State. Benchmarks were estimated only if data were available for a minimum of 30 States.

State-level estimates used in constructing benchmarks were primarily calculated from the same data source as the measure. In some cases, such as when the number of individuals sampled from a specific State was too small, data did not support estimation at a subnational level and benchmarks were not identified. We made exceptions for three measures derived from the Medical Expenditure Panel Survey (MEPS) and the National Health Interview Survey (NHIS).

For these measures of colorectal cancer screening, diabetes care, and pneumococcal vaccination, almost identical data were available from Behavioral Risk Factor Surveillance System (BRFSS) State data. However, BRFSS sampling and mode of administration differ from MEPS and NHIS. Hence, to calculate a benchmark for these measures, we first calculated the ratio of the top 10% achievable benchmark to the overall national estimate from BRFSS. We then applied this ratio to the overall national estimate from MEPS or NHIS. For example, if the BRFSS benchmark to national estimate ratio for a measure was 1.5, we would multiply the national estimate for that measure from MEPS by 1.5 to obtain a corresponding benchmark.

Time To Achieve Benchmark

The reports again include projections of the time expected for population subgroups to achieve the designated benchmark based on past performance. Using standard linear regression of the actual values over time and extrapolating to future years, we calculated the time required for the population, or population subgroup, to perform at the level of the top-performing States. Since projections of future performance were based on past performance data, we needed to ensure reliability by limiting estimates to those cases in which at least 4 data points were available.

An important caveat to consider in using information on time to achieve benchmarks is that the linear estimation approach used to derive these estimates assumes that characteristics of the population, technology, and health care infrastructure remain constant. Changes in the characteristics of the population or health care system may be expected to alter achievement of benchmarks. Advances in medical science, changes in the organization of health services, or reductions in the uninsured population following implementation of the Patient Protection and Affordable Care Act would be expected to alter the performance trajectory. In some cases, the time to achieve the benchmark will drop, while in other cases it may increase.

Time to achieve a benchmark is not presented for measures that met one or more of the following conditions:

- Average annual rate of change is less than 1%.
- Time to benchmark is estimated at 25 or more years.
- Trends over time show movement away from the benchmark (these occurrences are mentioned in the reports).
- Direction of trend changes over time; operationally, these were identified as cases in which there were at least 4 years of data showing “upward” movement and at least 4 years of data showing “downward” movement.

Methods Used in Highlights

Data presented in the Highlights differ from those in other chapters of the report in that core and supporting measures are characterized or grouped along several dimensions that offer insight into the performance of specific elements of the health care system. One category is type of care, where measures are classified as follows:

- **Prevention** measures focus on educating people about healthy behaviors and lifestyle modification in order to postpone or avoid illness and disease.
- **Acute care** measures pertain to the delivery of care for an acute condition and receipt of optimal treatment to help reduce the effects of illness and promote the best recovery possible.
- **Chronic disease management** measures pertain to diseases, such as diabetes and end stage renal disease, that are chronic and must be managed across a lifetime. Effective management of chronic disease can mean the difference between healthy living and frequent medical problems.
- **Outcome** measures are indicative of the result or impact of medical care. Many factors other than the care received affect health outcomes, such as lifestyle, social and physical

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environment, and genetic predisposition to disease. Outcome measures are typically adjusted for risk or patient characteristics.

Other groupings used in the Highlights chapter to summarize results include type of measure (quality, safety, access) and care setting.

Not all measures may be readily classified into the above groupings. For instance, many measures of patient perceptions of care do not fit within “type of care” groupings (e.g., “adults who had a doctor's office or clinic visit in the last 12 months whose health providers listened carefully to them”). Because these measures contain no information to suggest the type of care rendered, they are excluded from analyses that aggregate measures by type of care.

The Highlights also summarize disparities by race and ethnicity. For each racial or ethnic subgroup, the percentages of measures for which that group received worse care, similar care, or better care than the reference group (White or non-Hispanic White) were estimated. Group rates were divided by reference group rate to calculate the relative rate for core measures, with each core measure framed negatively (e.g., for immunization, the likelihood of not receiving the vaccine).

The process involved in compiling data for the Highlights is complicated by the fact that data on all measures are not collected or reported each year. In the summary trend analyses, we obtain all available data points between the year 2000 and the current data year for each measure. For most measures, trends include data points from 2001 to 2009.

To avoid duplication of estimates within categories, composite measures are not included in other categories where estimates from their component measures are used. For example, the diabetes composite measure (which includes hemoglobin A1c measurement, eye exam, flu vaccination, and foot exam) contributes to the overall rate for the core measures group but not to the diabetes group rate, which uses the estimates from the four supporting component measures.

Using the analytic approach previously described, we calculated the sum of measures that were identified as better, worse, or the same (when considering subgroup differences) or that were improving, worsening, or remaining the same over time (when considering trend data). The distribution of measures by subpopulation, type of service, and type of measure (i.e., quality or access) is presented as a way to summarize the status of health care quality and disparities in the United States.

Priority Populations

Whereas the NHQR charts show contrast by age, gender, insurance status, and geographic location, the NHDR shows contrasts by:

- Race: White, Black, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and more than one race.^{vii}

^{vii} Asian includes the former category of Asian or Pacific Islander prior to Office of Management and Budget guidelines, when information was not collected separately by group.

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- Ethnicity: Hispanic and non-Hispanic.^{viii}
- Income: Poor, low income, middle income, and high income.^{ix}
- Education: People with less than a high school education,^x high school graduates, and people with any college.
- Disabilities: Basic activity limitations (problems with mobility, self-care, domestic life, and activities that depend on sensory functioning) and complex activity limitations (limitations experienced in work and in community, social, and civic life).^{xi}

New to the 2012 report, where data were available, data showing contrasts by granular racial subgroups were reported. These racial subgroups include populations identified as Mexican, Puerto Rican, Cuban, other Hispanic/Latino, Spanish origin, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, other Asian, and Native Hawaiian.

While the reports do not address social determinants directly, analyses of disparities in health care related to family income and education are at the core of the Disparities Report and demonstrate the importance of socioeconomic status on quality of and access to health care.

In addition to including measures related to racial and ethnic groups, low-income groups, rural residents, and people with special health care needs in the NHDR Priority Populations chapter, we present measures pertaining to women, children, and older adults in other chapters of the NHDR and include comparisons.

Reporting Conventions

In presenting data and results, the NHQR and NHDR adhere to the following conventions, which are presented below to facilitate understanding of report findings.

- Unless otherwise stated, results discussed in the reports are statistically significant at the 5% level for subgroup differences and at the 10% level for trend analyses.
- For most measures presented in the reports, a higher score indicates better performance. However, in some cases, lower scores are better. Measures for which lower scores represent better performance are identified in chart notes.
- Trend analyses were performed only for measures for which a minimum of 4 years of data were available.
- Information on the construction of each measure is not always contained in the text, and readers should refer to the Measure Specifications appendix for measure details.

^{viii} Not all data sources collect information by race and ethnicity separately. In such cases, comparisons are made by combining racial/ethnic group categories (e.g., comparing non-Hispanic Blacks and Hispanics with non-Hispanic Whites.)

^{ix} Unless otherwise indicated, throughout this report, poor is defined as having family income less than 100% of the Federal poverty level (FPL); low income refers to income between 100% and 200% of the FPL; middle income refers to income between 200% and 400% of the FPL; and high income refers to income above 400% of the FPL. These are based on U.S. census poverty thresholds for each data year, which are used for statistical purposes.

^x Less than a high school education refers to people who did not complete high school.

^{xi} For the purpose of the NHDR, people with disabilities are those with physical, sensory, and/or mental health conditions who also have an associated decrease in functioning in such day-to-day activities as bathing, walking, doing everyday chores, and/or engaging in work or social activities.

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- When racial subgroups used by data sources for routine reporting are inconsistent with NHQR and NHDR standards, the source classification is used in the reports.
- Some measures may omit certain racial or ethnic groups because data for these groups were unavailable or did not meet criteria for statistical reliability, quality, or confidentiality.

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Chapter 2. Effectiveness of Care

As better understanding of health and sickness has led to superior ways of preventing, diagnosing, and treating diseases, the health of most Americans has improved dramatically. However, many Americans do not receive the full benefits of high-quality care.

This chapter is organized around nine clinical areas (cancer, cardiovascular disease, chronic kidney disease, diabetes, HIV disease, maternal and child health, mental health and substance abuse, musculoskeletal diseases, and respiratory diseases) and three types of health care services that typically cut across clinical conditions (lifestyle modification, functional status preservation and rehabilitation, and supportive and palliative care).

Two sections in this chapter focus on national priorities identified in the *National Strategy for Quality Improvement in Health Care*. The Cardiovascular Disease section addresses the priority “promoting the most effective prevention and treatment of the leading causes of mortality, starting with cardiovascular disease.” The Lifestyle Modification section addresses the priority “working with communities to promote wide use of best practices to enable healthy living.”

In this chapter, process measures are organized into several categories related to the patient’s need for preventive care, treatment of acute illness, and chronic disease management. These are derived from the original Institute of Medicine (IOM) categories: staying healthy, getting better, living with illness or disability, and coping with the end of life. There is sizable overlap among these categories, and some measures may be considered to belong in more than one category. Outcome measures are organized separately because prevention, treatment, and management can all play important roles in affecting outcomes.

Prevention

Caring for healthy people is an important component of health care. Educating people about health and promoting healthy behaviors can help postpone or prevent illness and disease. In addition, detecting health problems at an early stage increases the chances of effectively treating them, often reducing suffering and costs.

Treatment

Even when preventive care is ideally implemented, it cannot entirely avert the need for acute care. Delivering optimal treatments for acute illness can help reduce the consequences of illness and promote the best recovery possible.

Management

Some diseases, such as diabetes and end stage renal disease (ESRD), are chronic, which means they cannot simply be treated once; they must be managed over time. Management of chronic disease often involves promotion and maintenance of lifestyle changes and regular contact with a provider to monitor the status of the disease. For patients, effective management of chronic diseases can mean the difference between normal, healthy living and frequent medical problems.

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Outcomes

Many factors other than health care influence health outcomes, including a person's genes, lifestyle, and social and physical environment. However, for many individuals, appropriate preventive services, timely treatment of acute illness and injury, and meticulous management of chronic disease can positively affect mortality, morbidity, and quality of life.

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Cancer

Importance

Mortality

Number of deaths (2012 est.).....	577,190 (ACS, 2012)
Cause of death rank (2010 prelim.).....	2 nd (Murphy, et al., 2012)

Prevalence

Americans diagnosed and living with cancer (2008).....	12 million (ACS, 2012)
--	------------------------

Incidence

New cases of cancer (2012 est.).....	1,638,910 (ACS, 2012)
New cases of breast cancer (2012 est.)	226,870 (ACS, 2012)
New cases of colorectal cancer (2012 est.)	143,460 (ACS, 2012)

Cost

Total cost ⁱ (2007)	\$226.8 billion (ACS, 2012)
Direct costs ⁱⁱ (2007)	\$103.8 billion (ACS, 2012)
Indirect costs (2007)	\$123 billion (ACS, 2012)
Cost-effectiveness ⁱⁱⁱ of breast cancer screening	\$35,000-\$165,000/QALY (Maciosek, et al., 2006)
Cost-effectiveness of colorectal cancer screening	\$0-\$14,000/QALY (Maciosek, et al., 2006)

Measures

Evidence-based consensus defining good quality care and how to measure it currently exists for only a few cancers and a few aspects of care. Breast and colorectal cancers have high incidence rates and are highlighted in alternate years of the *National Healthcare Quality Report* (NHQR) and *National Healthcare Disparities Report* (NHDR). In even years, the reports focus on colorectal cancer, and in odd years, the reports focus on breast cancer.

This year, the report measures are:

- Colorectal cancer screening.
- Colorectal cancer first diagnosed at advanced stage.
- Surgical resection of colon cancer that includes at least 12 lymph nodes.
- Colorectal cancer deaths.

ⁱ Throughout this report, total cost equals cost of medical care (direct cost) and economic costs of morbidity and mortality (indirect cost).

ⁱⁱ Direct costs are defined as “personal health care expenditures for hospital and nursing home care, drugs, home care, and physician and other professional services.”

ⁱⁱⁱ Cost-effectiveness is measured here by the average net cost of each quality-adjusted life year (QALY) that is saved by the provision of a particular health intervention. QALYs are a measure of survival adjusted for its value: 1 year in perfect health is equal to 1.0 QALY, while a year in poor health would be something less than 1.0. A lower cost per QALY saved indicates a greater degree of cost-effectiveness.

Findings

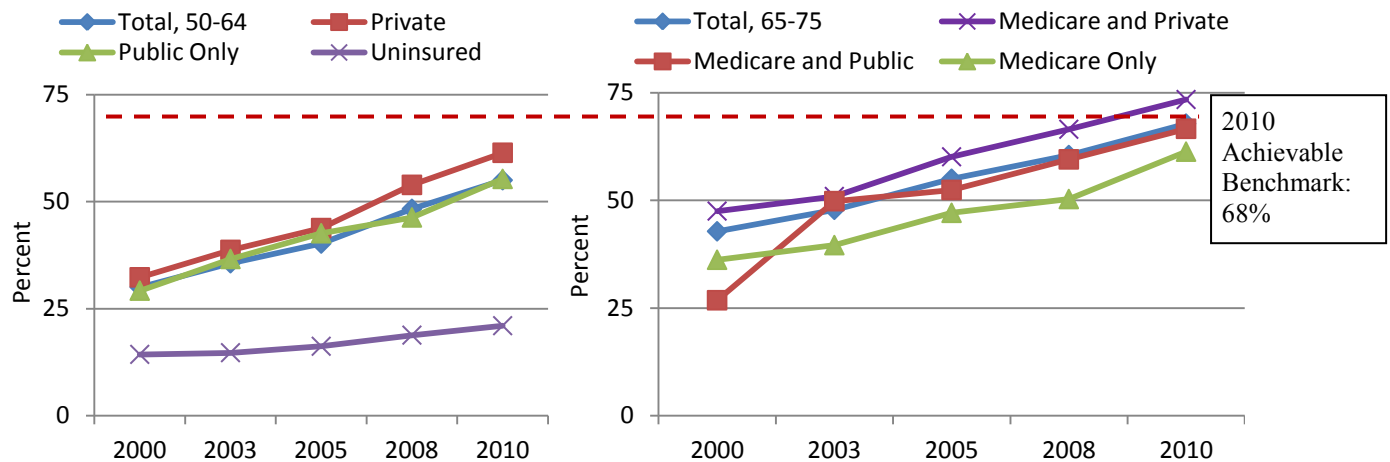
New

Prevention: Colorectal Cancer Screening

Colorectal cancer is the third most common cancer in adults. Prevention of colorectal cancer includes modifying risk factors such as weight, physical activity, smoking, and alcohol use, as well as screening for early disease. Screening can detect abnormal growths before they develop into cancer. Early detection increases treatment options and the chances for survival. Effective screening modalities include fecal occult blood testing, flexible sigmoidoscopy, and colonoscopy.

Previous reports tracked receipt of colorectal cancer screening among adults age 50 and over. The colorectal cancer screening measure used in the 2012 NHQR and NHDR reflects a more recent recommendation of the U.S. Preventive Services Task Force showing the strongest support for screening among adults ages 50-75.

Figure 2.1. Adults ages 50-75 who reported having colorectal cancer screening, by age and insurance, 2000, 2003, 2005, 2008, and 2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000, 2003, 2005, 2008, and 2010.

Denominator: Civilian noninstitutionalized population ages 50-75.

Note: Rates are age adjusted to the 2000 U.S. standard population. Colorectal cancer screening includes blood stool test in the past year or sigmoidoscopy in the past 5 years and blood stool test in the past 3 years or colonoscopy in the past 10 years.

- The overall percentage of adults ages 50-75 who reported receiving colorectal cancer screening significantly increased, from 34.1% in 2000 to 59.2% in 2010 (data not shown). Rates increased among all insurance groups (Figure 2.1).
- In all years, adults ages 50-64 were less likely to receive colorectal cancer screening than adults ages 65-75.
- In all years, among adults ages 50-64, those who were uninsured were less likely to receive colorectal cancer screening than those with private insurance. In 2008 and 2010, adults with public insurance only were also less likely to receive screening than adults with private insurance.

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- Among adults ages 65-75, those with Medicare only were less likely to receive colorectal cancer screening than those with Medicare and any private supplemental insurance^{iv} in all years.
- Except in 2003, adults with Medicare and other public insurance were also less likely to receive screening than those with Medicare and any private supplemental insurance.
- The 2010 top 5 State achievable benchmark was 68%.^v Among adults ages 50-64, those with private insurance will need 2 years and those with public insurance only will need 5 years to attain the benchmark, while those who were uninsured will not attain the benchmark for 68 years. Among adults ages 65-75, those with Medicare and private insurance have attained this benchmark, while those with Medicare and public insurance will need another year and those with Medicare only will need 3 years.

Also, in the NHDR:

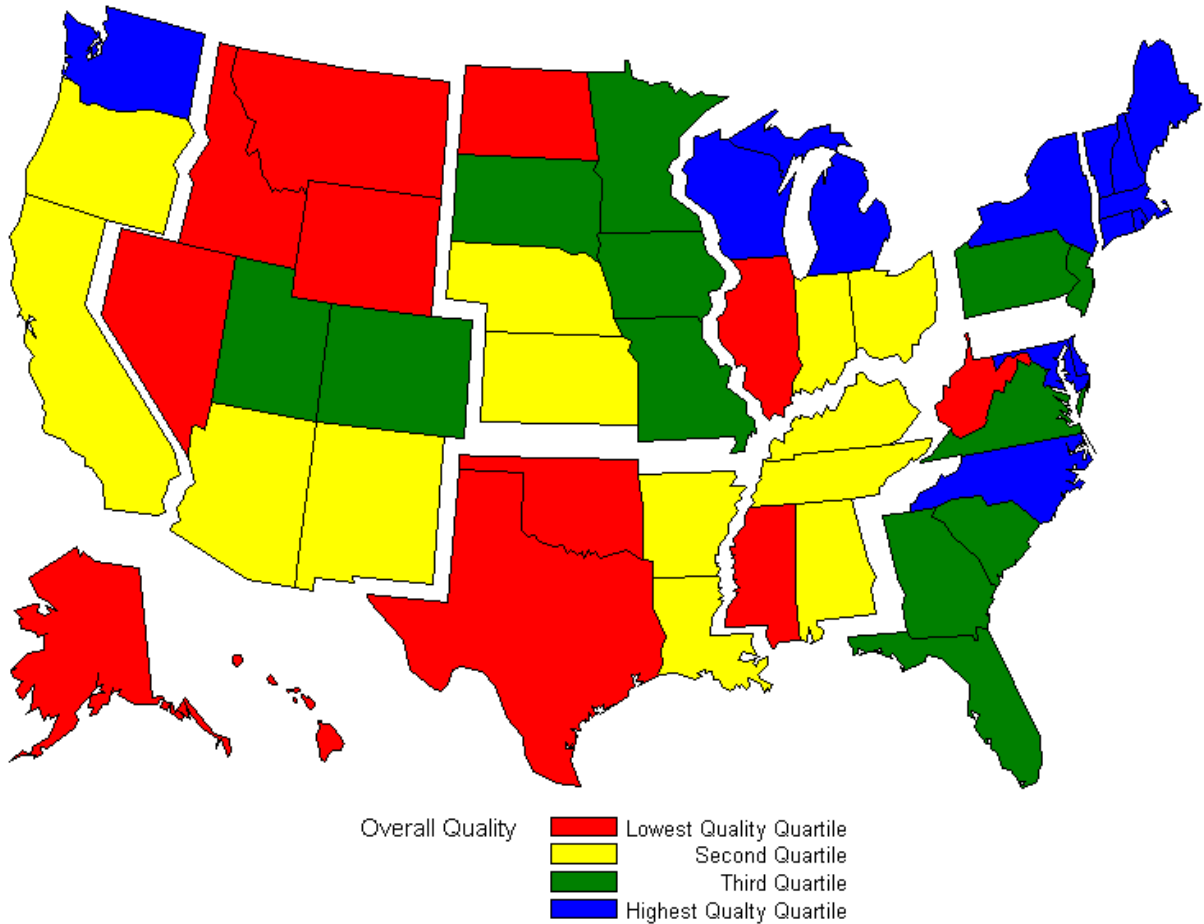
- In all years, poor, low-income, and middle-income adults were less likely to receive colorectal cancer screening than high-income adults.

^{iv} Medicare does not cover all health care costs. Medicare beneficiaries can purchase private supplemental insurance from insurance companies to help pay for coinsurance, copayments, and deductibles. Low-income beneficiaries may receive assistance from Medicaid and other public insurance programs to help pay for costs not covered by Medicare. Beneficiaries with Medicare only typically must pay out of pocket for costs not covered by Medicare.

^v The top 5 States that contributed to the achievable benchmark are Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island.

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Figure 2.2. State variation: Adults ages 50-75 who reported having colorectal cancer screening, 2010



Key: Lowest Quality Quartile identifies States with the lowest rates of colorectal cancer screening; Highest Quality Quartile identifies States with the highest rates of colorectal cancer screening.

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2010.

- The States in the lowest quality quartile had cancer screening rates under 58.3% while the States in the highest quality quartile had cancer screening rates over 67.6%.
- States in the East South Central, West South Central, Mountain, and Pacific census divisions tended to have lower rates of colorectal cancer screening while States in the New England, Middle Atlantic, and South Atlantic census divisions tended to have higher rates of colorectal cancer screening (Figure 2.2).

Also, in the NHDR:

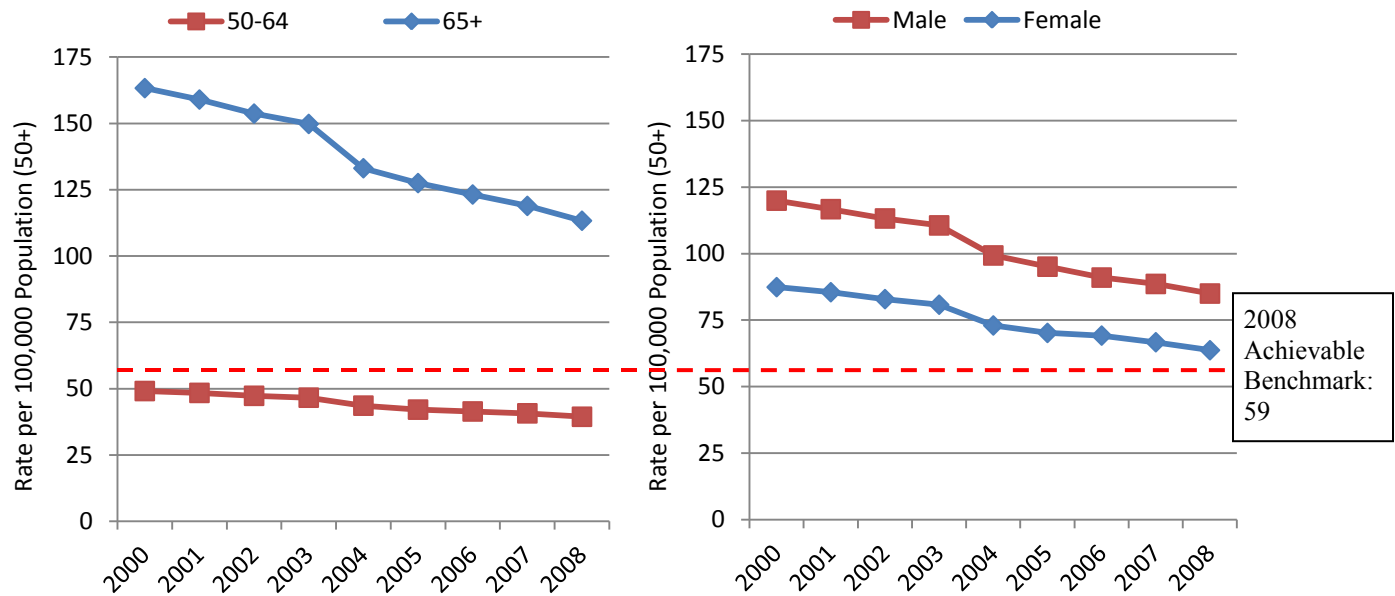
- States in the West South Central, Mountain, and Pacific census divisions tended to have larger income-related disparities in colorectal cancer screening.

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Outcome: Advanced Stage Colorectal Cancer

Cancers can be diagnosed at different stages of development. Cancers diagnosed early before spread has occurred are generally more amenable to treatment and cure; cancers diagnosed late with extensive spread often have poor prognoses. The rate of cancer cases that are diagnosed at late or advanced stages is a measure of the effectiveness of cancer screening efforts and of adherence to followup care after a positive screening test. Because many cancers often take years to develop, changes in rates of late-stage cancer may lag behind changes in rates of screening.

Figure 2.3. Adults age 50 and over who have advanced stage colorectal cancer, per 100,000 population, by age and gender, 2000-2008



Source: Centers for Disease Control and Prevention, National Program of Cancer Registries and National Cancer Institute, Surveillance, Epidemiology, and End Results (SEER) Program, 2000-2008.

Denominator: Adults age 50 and over.

Note: For this measure, lower rates are better. Age adjusted to the 2000 U.S. standard population. Advanced stage colorectal cancer is defined as regional or distant stage. Registries meeting *United States Cancer Statistics* publication criteria for every year, 2000-2008, are included and cover 90.1% of the total U.S. population. States excluded are Arkansas, District of Columbia, Mississippi, North Carolina, South Dakota, Tennessee, and Virginia.

- From 2000 to 2008, the rate of advanced stage colorectal cancer fell among all age groups and both genders (Figure 2.3).
- In all years, adults age 65 and over had higher rates of advanced stage colorectal cancer than adults ages 50-64 and men had higher rates than women.
- The 2008 top 5 State achievable benchmark was 59 per 100,000 population.^{vi} Adults ages 50-64 have attained the benchmark. At the current rates of decrease, women could achieve the benchmark in a year, while men would need 5 years and adults age 65 and over would need 8 years.

^{vi} The top 5 States that contributed to the achievable benchmark are Arizona, Colorado, District of Columbia, Vermont, and Virginia.

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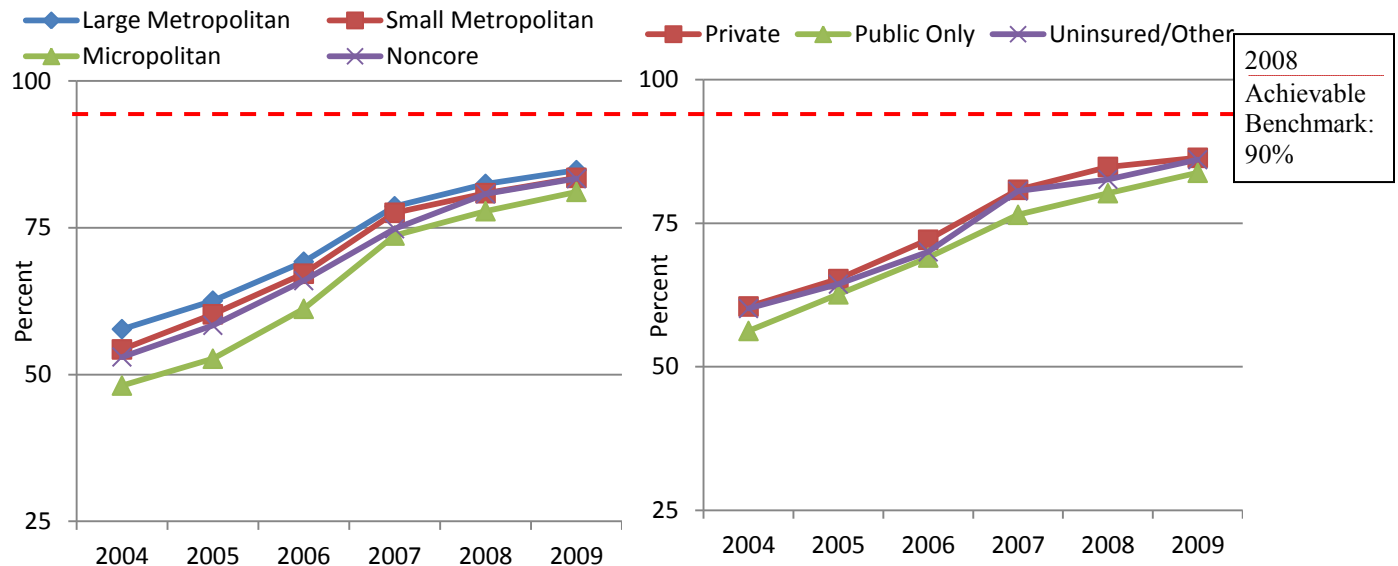
Also, in the NHDR:

- In all years, Blacks had higher rates of advanced stage colorectal cancer than Whites.
- In all years, American Indians and Alaska Natives (AI/ANs) and Asians and Pacific Islanders (APIs) had lower rates than Whites, and Hispanics had lower rates than non-Hispanic Whites.

Treatment: Receipt of Recommended Care for Colorectal Cancer

Different diagnostic and treatment options exist for various types of cancer. Some aspects of cancer care are well established as beneficial and are commonly recommended. The appropriateness of recommended care depends on different factors, such as the stage or the extent of the cancer within the body (especially whether the disease has spread from the original site to other parts of the body). Other types of care are important for accurate diagnosis, such as ensuring adequate examination of lymph nodes when surgery is performed.

Figure 2.4. Patients with colon cancer who received surgical resection of colon cancer that included at least 12 lymph nodes pathologically examined, by residence location and insurance, 2004-2009



Source: Commission on Cancer, American College of Surgeons and American Cancer Society, National Cancer Data Base, 2004-2009.

Denominator: U.S. population.

- The overall percentage of adults diagnosed with colorectal cancer who received recommended care significantly increased from 55.4% in 2004 to 83.9% in 2009 (data not shown). Significant improvement was observed in all residence locations and among all insurance groups (Figure 2.4).
- In all years, residents of micropolitan areas were less likely to receive recommended care than residents of large metropolitan areas. Until 2009, residents of noncore areas were also less likely to receive recommended care.
- In all years, patients with public insurance only were less likely to receive recommended care than patients with private insurance.

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- The 2008 top 5 State achievable benchmark was 90%.^{vii} At current rates of improvement, all groups could achieve the benchmark within 2 years.

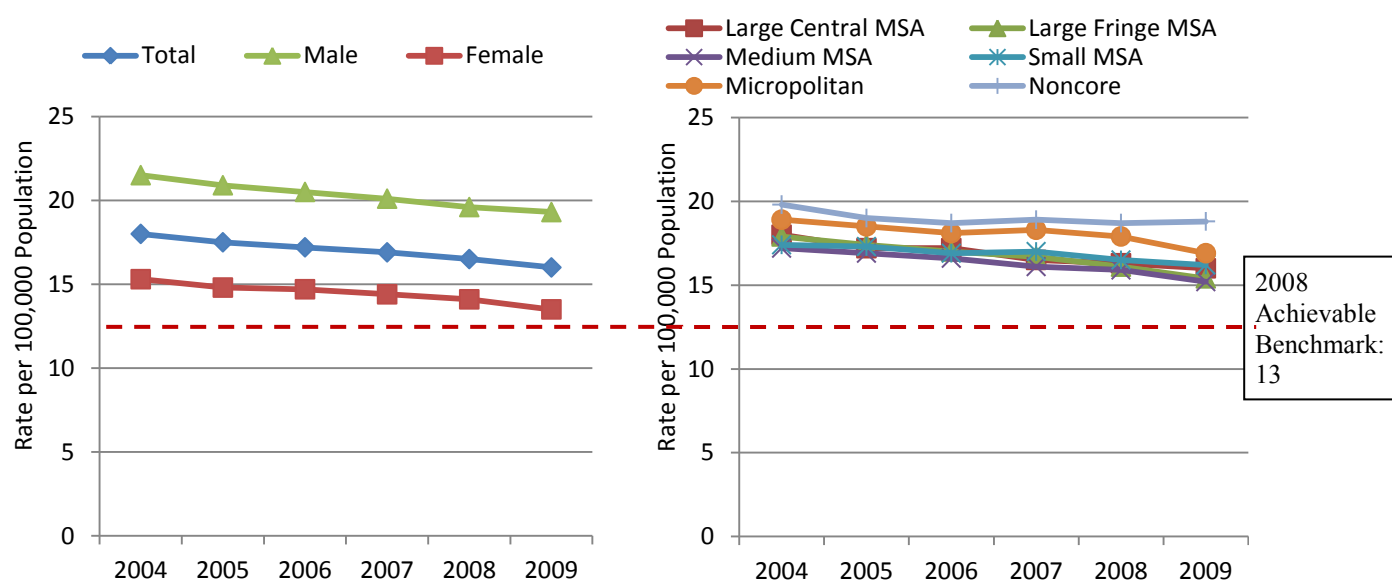
Also, in the NHDR:

- In all years, low-income patients were less likely to receive recommended care than high-income patients.

Outcome: Colorectal Cancer Deaths

The death rate from a disease is a function of many factors, including the causes of the disease; social forces; and effectiveness of the health care system in providing prevention, treatment, and management of the disease. Colorectal cancer deaths reflect the impact of colorectal cancer screening, diagnosis, and treatment. Mortality is measured as the number of deaths per 100,000 population. Declines in colorectal cancer deaths can be attributed, in part, to improvements in early detection and treatment.

Figure 2.5. Age-adjusted colorectal cancer deaths per 100,000 population, by gender and residence location, 2004-2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality, 2004-2009.

Denominator: U.S. population.

Note: For this measure, lower rates are better. Total rate is age adjusted to the 2000 U.S. standard population.

- Between 2004 and 2009, the rate of colorectal cancer deaths significantly decreased, from 17.5 to 16 per 100,000 population (Figure 2.5).
- In all years, males had higher colorectal cancer death rates than females and residents of noncore areas had higher death rates than residents of large fringe metropolitan areas.

^{vii} The top 5 States that contributed to the achievable benchmark are Delaware, Missouri, Utah, Vermont, and Wisconsin.

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Since 2007, residents of micropolitan areas have also had higher death rates than residents of large fringe metropolitan areas.

- The 2008 top 5 State achievable benchmark was 13 colorectal cancer deaths per 100,000 population.^{viii} Females could achieve the benchmark in 2 years while males would need 14 years. Residents of large central, large fringe, and medium metropolitan areas could achieve the benchmark in 5 to 10 years and residents of small metropolitan and micropolitan areas could achieve the benchmark in 10 to 15 years.

Also, in the NHDR:

- In all years, Blacks had higher colorectal cancer death rates than Whites.
- In all years, AI/ANs and APIs had lower death rates than Whites and Hispanics had lower death rates than non-Hispanic Whites.

^{viii} The top 5 States that contributed to the achievable benchmark are Arizona, Hawaii, Idaho, Montana, and Utah.

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Cardiovascular Disease

Importance

Mortality

Number of deaths from major cardiovascular disease
(2010 prelim.) 777,548 (Murphy, et al., 2012)
Cause of death rank (2010 prelim.)..... 1st (Murphy, et al., 2012)

Prevalence

Number of cases of heart failure (2010 est.).....5.1 million (AHA, 2013)
Number of cases of high blood pressure among U.S. adults
age 18 years and over (2003-2010 est.)67 million (MMWR, 2012b)

Incidence

Number of heart attacks or cases of fatal coronary heart disease
(2010 est.) 915,000 (AHA, 2013)

Cost

Total cost of cardiovascular disease (2009 est.)\$312.6 billion (AHA, 2013)
Total cost of heart disease (2009 est.).....\$195.2 billion (AHA, 2013)
Direct costs of cardiovascular disease (2009 est.)\$192.1 billion (AHA, 2013)
Cost-effectiveness of hypertension screening.....\$14,000-\$35,000/QALY (Macosiek, et al., 2006)

Measures

The NHQR and NHDR track several quality measures for preventing and treating cardiovascular disease. Five measures are highlighted here:

- Blood pressure monitoring.
- Blood pressure control.
- Inpatient deaths following heart attack.
- Angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB) for heart failure.
- Hospitalization for congestive heart failure.

Several measures related to heart disease are also presented in other chapters of this report. Timeliness of cardiac reperfusion for heart attack patients is tracked in Chapter 4, Timeliness. Receipt of complete written discharge instructions by patients with heart failure is tracked in Chapter 6, Care Coordination.

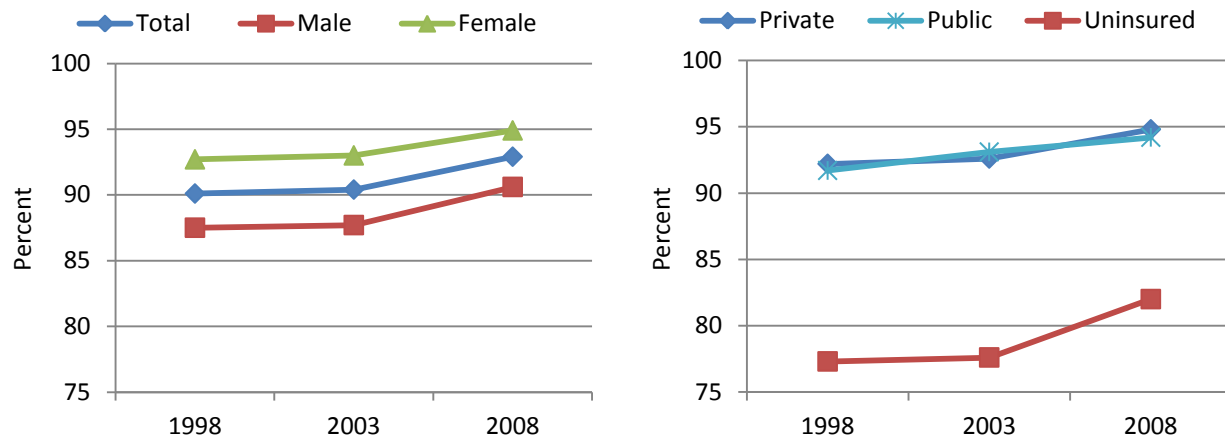
Findings

Prevention: Blood Pressure Monitoring

National screening guidelines for hypertension are well established (USPSTF, 2007). However, since high blood pressure is asymptomatic in most cases, it is not surprising that many of those affected do not know they have this condition.

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Figure 2.6. Adults who received a blood pressure measurement in the last 2 years and can state whether their blood pressure was normal or high, by gender and insurance (ages 18-64), 1998, 2003, and 2008



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1998, 2003, and 2008.

Denominator: Civilian noninstitutionalized population age 18 and over.

Note: Rates are age adjusted to the 2000 U.S. standard population.

- In 2008, 92.9% of adults reported they had a blood pressure measurement in the past 2 years (Figure 2.6).
- In all years, men were less likely to have a blood pressure measurement than women.
- Among adults ages 18-64, those who were uninsured were less likely to have a blood pressure measurement than those with private health insurance.

Also, in the NHDR:

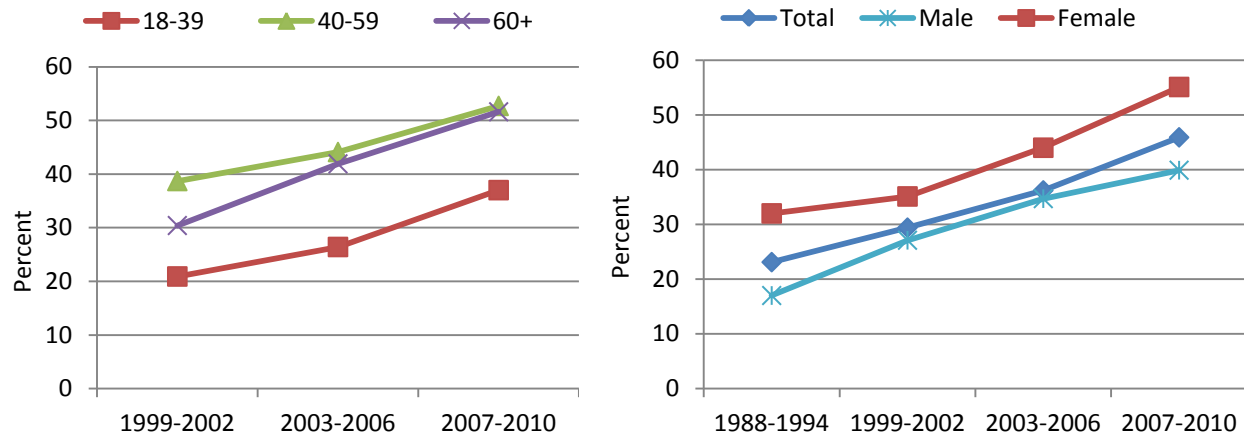
- In all years, Hispanics were less likely than Whites and adults with less than a high school education and high school graduates were less likely than adults with any college education to have a blood pressure measurement.

Management: Blood Pressure Control

Although progress has been made in raising awareness of blood pressure screening and monitoring, blood pressure control among people with diagnosed high blood pressure remains a problem.

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Figure 2.7. Adults with hypertension whose blood pressure is under control, by age, 1999-2002, 2003-2006, and 2007-2010, and gender, 1988-1994, 1999-2002, 2003-2006, and 2007-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1988-1994, 1999-2002, 2003-2006, and 2007-2010.

Denominator: U.S. civilian noninstitutionalized population age 18 and over.

Note: Rates are age adjusted to the 2000 U.S. standard population. Rates by age are not age adjusted. Blood pressure under control is defined as having a mean systolic blood pressure <140 and mean diastolic blood pressure <90 among all hypertensive patients.

- From 1988-1994 to 2007-2010, the percentage of adults with hypertension who had their blood pressure under control increased from 23.1% to 45.9% (Figure 2.7).
- In all years, adults ages 40-59 and 60 and over were more likely to have their blood pressure under control than adults ages 18-39.
- In all years, women were more likely to have their blood pressure under control than men.

Also, in the NHDR:

- In all years, Mexican Americans were less likely than Whites to have their blood pressure under control.

Outcome: Inpatient Deaths Following Heart Attack

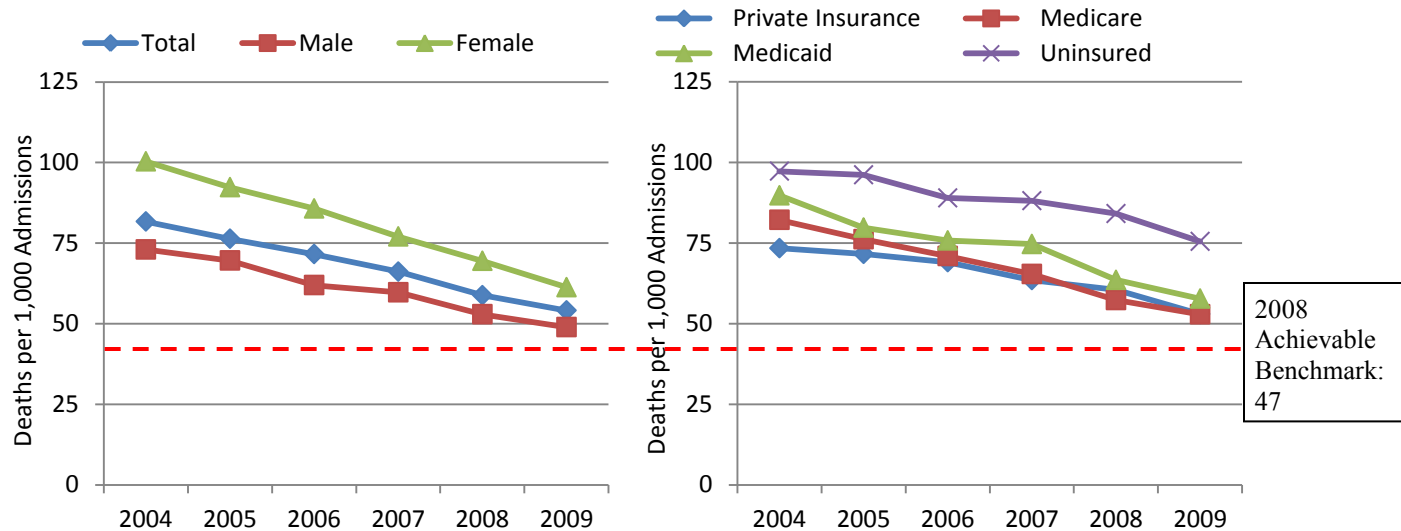
Heart attack, or acute myocardial infarction, is a common life-threatening condition that requires rapid recognition and efficient treatment in a hospital to reduce the risk of serious heart damage and death. Measuring processes of heart attack care can provide information about whether a patient received specific needed services, but these processes make up a very small proportion of all the care that a heart attack patient needs. Measuring outcomes of heart attack care, such as mortality, can provide a more global assessment of all the care a patient receives and usually is the aspect of quality that matters most to patients.

Significant improvements in process measures of quality of care for heart attack have occurred in recent years. All process measures tracked in past reports have attained overall performance levels exceeding 95% and have been retired. Therefore, the 2012 NHQR and NHDR focus on outcome measures. Survival following admission for heart attack reflects multiple patient factors, such as a patient's comorbidities, as well as health care system factors, such as the

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possible need to transfer patients to other hospitals for services. It also may partly reflect receipt of appropriate health services.

Figure 2.8. Inpatient deaths per 1,000 adult hospital admissions with heart attack, by gender and expected payment source, 2004-2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators modified version 4.1, 2004-2009.

Denominator: Adults age 18 and over admitted to a non-Federal community hospital in the United States with acute myocardial infarction as principal discharge diagnosis.

Note: For this measure, lower rates are better. Rates are adjusted by age, major diagnostic category, all payer refined-diagnosis related group of mortality score, and transfers into the hospital.

- From 2004 to 2009, the overall inpatient mortality rate for hospital admissions with heart attack decreased significantly overall and for both genders and all expected payment sources (Figure 2.8).
- In all years, women had higher rates of inpatient heart attack deaths than men and uninsured patients had higher rates than privately insured patients. Before 2008, Medicaid patients also had higher rates than privately insured patients.
- The 2008 top 3 State achievable benchmark for inpatient heart attack mortality was 47 per 1,000 admissions.^{ix} At current rates of improvement, men, women, and all patients with insurance could achieve the benchmark within 2 years; uninsured patients would not achieve the benchmark for 7 years.

Also, in the NHDR:

- Since 2004, Blacks have had lower inpatient mortality rates than Whites.

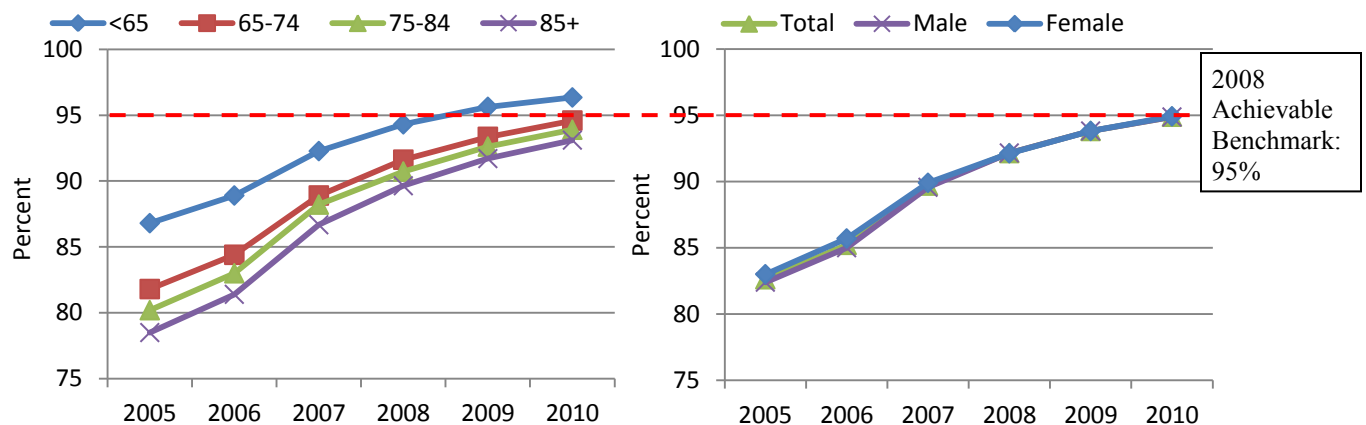
^{ix} The top 3 States that contributed to the achievable benchmark are Arizona, Michigan, and Ohio.

Treatment: Angiotensin-Converting Enzyme Inhibitor or Angiotensin Receptor Blocker for Heart Failure

Heart failure occurs when the heart muscle is too weak to adequately pump blood for the body's metabolic needs. Such impairment can result in a lack of adequate blood flow to vital organs, including the brain, kidney, and other organs, as well as a backup of fluid into the lungs. Often, heart failure is caused by damage to the heart muscle from a heart attack, which can seriously weaken the left ventricle, the main pumping chamber of the heart.

Congestive heart failure is the most frequent discharge diagnosis for Medicare beneficiaries. ACE inhibitors and ARBs have been found to improve survival and slow or prevent further loss of the heart's pumping ability.

Figure 2.9. Hospital patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge, by age and gender, 2005-2010



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2010.

Denominator: Patients hospitalized with a principal diagnosis of acute heart failure and left ventricular systolic dysfunction.

- From 2005 to 2010, the overall percentage of patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge increased from 82.6% to 94.9% (Figure 2.9). Improvements were observed among all age groups and both genders.
- In all years, patients age 65 and over were less likely to receive ACE inhibitors or ARBs for heart failure than patients under age 65.
- The 2008 top 5 State achievable benchmark for patients with heart failure and left ventricular systolic dysfunction prescribed ACE inhibitor or ARB at discharge was 95%.^x At current rates, all age and gender groups could attain the benchmark within a year.

Also, in the NHDR:

- In all years, Blacks were more likely than Whites to receive ACE inhibitors or ARBs at discharge for heart failure.

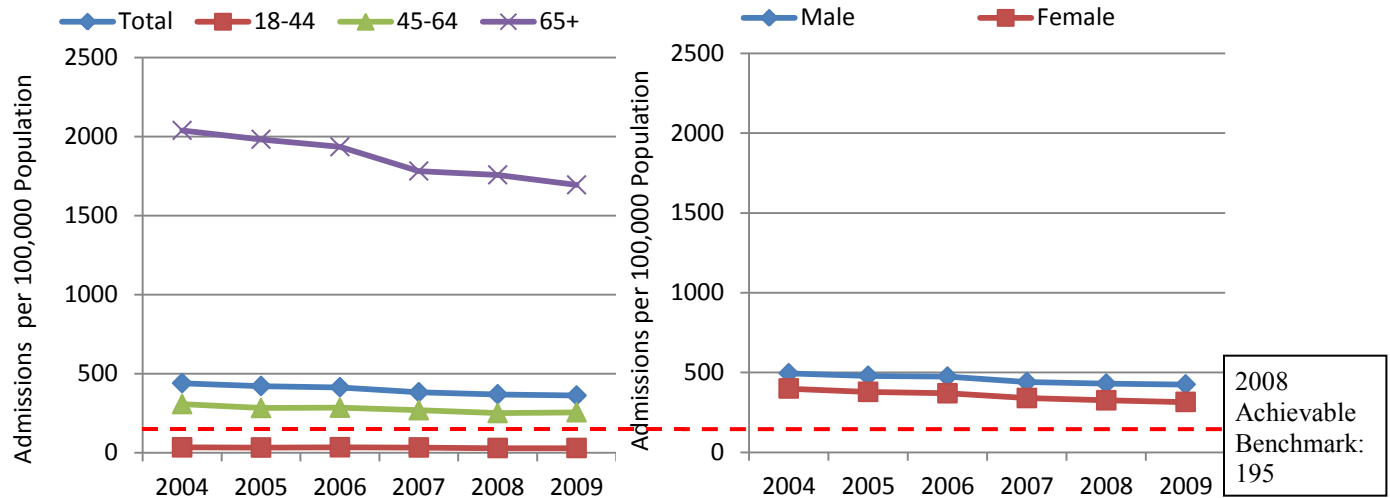
^x The top 5 States that contributed to the achievable benchmark are Alaska, Maine, New Hampshire, South Carolina, and Virginia.

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Outcome: Hospitalization for Congestive Heart Failure

Some hospitalizations for heart failure are unavoidable, but rates of hospitalization can be influenced by the quality of outpatient care.

Figure 2.10. Adult admissions for congestive heart failure per 100,000 population, by age and gender, 2004-2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators modified version 4.1, 2004-2009.

Denominator: U.S. resident population age 18 and over.

Note: For this measure, lower rates are better. Age rates are adjusted by gender; gender rates are adjusted by age.

- From 2004 to 2009, the overall hospitalization rate for congestive heart failure decreased significantly overall and for each age group and both genders (Figure 2.10).
- In all years, patients ages 45-64 and 65 and over had higher rates than patients ages 18-44, and men had higher rates than women.
- The 2008 top 4 State achievable benchmark for heart failure admissions was 195 per 100,000 population.^{xi} Overall, this benchmark could not be achieved for 10 years.
- At current rates of improvement, patients ages 45-64 could achieve this benchmark in 6 years while patients age 65 and over would take 21 years. Women could achieve the benchmark in 7 years while men would take 15 years.

Also, in the NHDR:

- In all years, Blacks had higher rates of admission for congestive heart failure compared with Whites while APIs had lower rates.
- In all years, residents of the highest area income quartile had lower rates than residents of the two lower area income quartiles.

^{xi} The top 4 States that contributed to the achievable benchmark are Colorado, Oregon, Utah, and Vermont.

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Chronic Kidney Disease

Importance

Mortality

Total ESRD deaths (2009) 86,262 (USRDS, 2011)

Prevalence

Total ESRD cases (2009) 571,414 (USRDS, 2011)

Incidence

Number of new ESRD cases (2009) 116,395 (USRDS, 2011)

Cost

Total ESRD Medicare program expenditures (2009) \$29 billion (USRDS, 2011)

Measures

The NHQR and NHDR track several measures of management of chronic kidney disease to assess the quality of care provided to renal dialysis patients. A previous core measure, adequacy of dialysis, was retired because it achieved a rate above 95%. Four measures are highlighted here:

- Nephrology care before kidney failure.
- Use of arteriovenous fistula (AVF) at first outpatient dialysis.
- Survival on dialysis.
- Registration for transplantation.

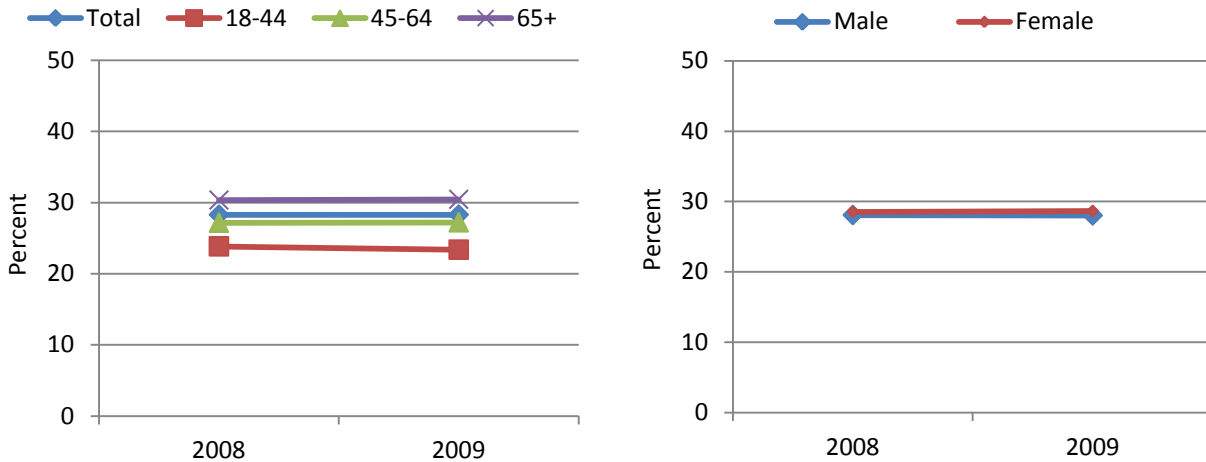
Findings

Management: Nephrology Care Before Kidney Failure

Early referral to a nephrologist is important for patients with progressive chronic kidney disease approaching kidney failure. Mindful management during the transition to ESRD permits informed selection of renal replacement therapy, placement and maturation of vascular access, and workup for kidney transplantation. Patients who begin nephrology care more than a year before kidney failure are less likely to begin dialysis with a catheter, experience infections related to vascular access, or die during the months after dialysis initiation (USRDS, 2010).

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Figure 2.11. New adult end stage renal disease patients beginning nephrology care more than 12 months before start of dialysis, by age and gender, 2008-2009



Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2008-2009.

Denominator: New end stage renal disease patients age 18 and over.

- In 2009, only 28% of new ESRD patients age 18 and over began nephrology care more than 12 months before start of dialysis (Figure 2.11).
- In both years, patients ages 45-64 and 65 and over were more likely to receive timely nephrology care than patients ages 18-44.

Also, in the NHDR:

- In 2008 and 2009, Blacks were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to begin nephrology care more than 12 months before start of dialysis.

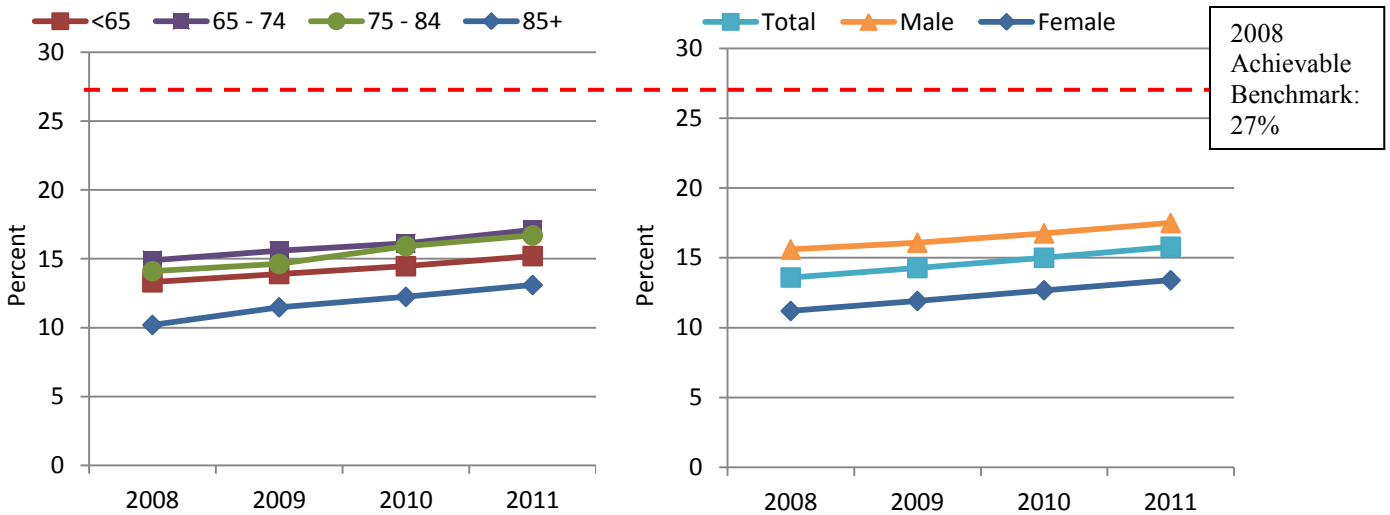
Management: Use of Arteriovenous Fistula at First Outpatient Dialysis

For people with ESRD, dialysis can accommodate for lost kidney function by balancing minerals and water in the blood and removing waste. Vascular access is needed to reach blood vessels so that dialysis can be performed. An AVF is the preferred type of access for most hemodialysis patients for three reasons: It provides adequate blood flow for dialysis, it lasts a long time, and it has a low complication rate compared with other methods.

Although there is consensus that AVF should be the primary method of vascular access, AVF utilization has historically been very low. Therefore, the Centers for Medicare & Medicaid Services (CMS) has sought to increase rates of AVF for primary access by forming a nationwide initiative and collaborative effort to increase overall use of AVF. In 2005, CMS set a national AVF goal of 66% for prevalent hemodialysis patients in the United States.

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Figure 2.12. Incident adult hemodialysis patients who used an arteriovenous fistula at first outpatient dialysis, by age and gender, 2008-2011



Source: Centers for Medicare & Medicaid Services, Fistula First Incident AVF Dataset, 2008-2011.

Denominator: New end stage renal disease hemodialysis patients.

- From 2008 to 2011, the percentage of dialysis patients who used an AVF at first dialysis increased from 13.6% to 15.8% (Figure 2.12).
- In all years, patients ages 65-74 had higher rates of AVF at first dialysis than those younger than age 65. Female patients had significantly lower rates of AVF at first dialysis than males.
- The 2008 top 5 State achievable benchmark was 27%.^{xii} Overall, this benchmark could not be achieved for 15 years. Males and people age 65 and over could attain the benchmark sooner while females and people under age 65 would need between 15 and 20 years.

Also, in the NHDR:

- In all years, Blacks had lower rates of AVF at first dialysis than Whites, and Hispanics had lower rates than non-Hispanic Whites.

Outcome: Survival on Dialysis

Survival on dialysis may be related in part to the quality of care dialysis providers deliver. This measure compares actual patient survival with expected patient survival based on patients' age, race, gender, diabetes status, years on dialysis, and comorbid conditions. Values greater than 1 indicate worse than expected survival; values less than 1 indicate better than expected survival.

Focus on U.S. Territories

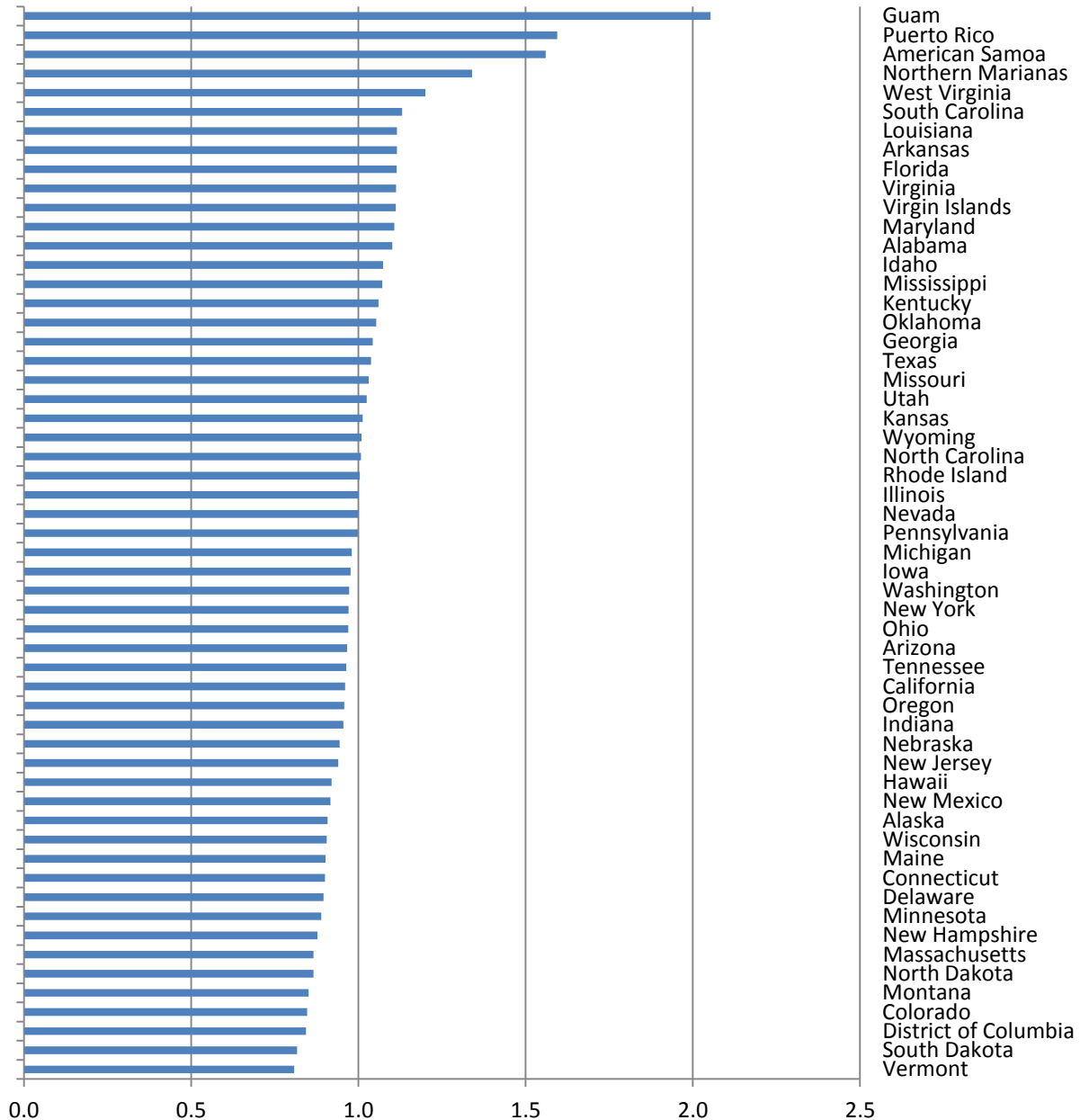
Few data sources can assess quality of care received by residents of U.S. territories. Available data suggest that care in U.S. territories is suboptimal (Nunez-Smith, et al., 2011). Data collected

^{xii} The top 5 States that contributed to the achievable benchmark are Hawaii, Maine, Montana, New Hampshire, and Oregon.

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by CMS on dialysis facilities and compiled by the University of Michigan Kidney Epidemiology and Cost Center are unusual because they include such residents and are valuable for measuring quality received by U.S. citizens residing outside of the United States.

Figure 2.13. Standardized mortality rates on dialysis, by State or territory, 2009/2010



Source: University of Michigan Kidney Epidemiology and Cost Center, 2010 Dialysis Facility Report.

Denominator: End stage renal disease hemodialysis patients age 20 and over.

Note: For this measure, rates for 2009 and 2010 are averaged. Lower rates are better.

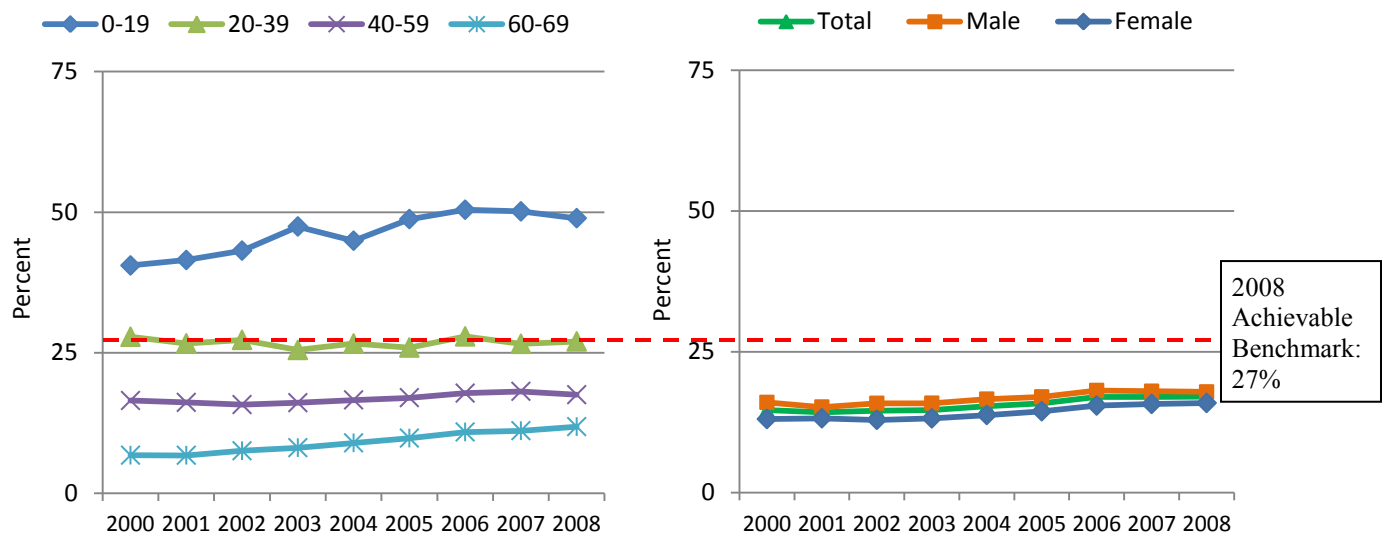
- Standardized mortality rates vary widely across U.S. States and territories (Figure 2.13).
- The four jurisdictions with the highest standardized mortality rates are all territories.

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Management: Registration for Transplantation

Kidney transplantation is a procedure that replaces a failing kidney with a healthy kidney. Transplantation is not best for all patients. If a patient is deemed a good candidate for transplant, he or she is placed on the transplant program's waiting list. Patients wait for transplant centers to match them with the most suitable donor. Registration for transplantation is an initial step toward kidney transplantation. Early transplantation that decreases or eliminates the need for dialysis can also lessen the occurrence of acute rejection and patient mortality.

Figure 2.14. Dialysis patients who were registered on a waiting list for transplantation, by age and gender, 2000-2008



Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2008.

Denominator: End stage renal disease hemodialysis patients and peritoneal dialysis patients under age 70.

- From 2000 to 2008, the percentage of dialysis patients who were registered on a waiting list for transplantation increased from 14.7% to 17% (Figure 2.14). Improvements were observed among all age groups except patients ages 20-39 and among both males and females.
- In all years, patients ages 20-69 were less likely than patients ages 0-19 to be registered on a waiting list. Females were less likely than males to be registered on a waiting list.
- The 2008 top 5 State achievable benchmark was 27%.^{xiii} Overall, at the current rate of improvement, the benchmark would not be attained for 25 years. Patients ages 40-59 would need 37 years to achieve the benchmark.

Also, in the NHDR:

- In all years, Blacks and AI/ANs were less likely to be registered on a waiting list than Whites. However, APIs were more likely to be registered on a waiting list than Whites.

^{xiii} The top 5 States that contributed to the achievable benchmark are Delaware, Iowa, Minnesota, Montana, and Vermont.

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Diabetes

Importance

Mortality

Number of deaths (2007)	71,382 (CDC, 2011b)
Cause of death rank (2007)	7 th (CDC, 2011b)

Prevalence

Total number of people with diabetes (2010)	25.8 million (CDC, 2011c)
Number of people with diagnosed diabetes (2010)	18.8 million (CDC, 2011c)
Number of people with undiagnosed diabetes (2007)	7.0 million (CDC, 2011c)

Incidence

New cases (age 20 and over, 2010)	1.9 million (CDC, 2011c)
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Cost

Total cost (2007)	\$174 billion (CDC, 2011c)
Direct medical costs (2007)	\$116 billion (CDC, 2011c)
Indirect costs (2007)	\$58 billion (CDC, 2011c)

Measures

Routine monitoring of blood glucose levels with hemoglobin A1c (HbA1c^{xiv}) tests and foot and dilated eye examinations have been shown to help prevent or mitigate complications of diabetes, such as diabetic neuropathy, retinopathy, and vascular and kidney disease. With more than 600,000 discharges in 2009, diabetes is one of the leading causes of hospitalization in the United States (CDC, 2011a). However, with appropriate and timely ambulatory care, it may be possible to prevent many hospitalizations for diabetes and related complications.

The measures reported in this section examine the extent to which individuals with diabetes receive care needed to prevent complications and the development of kidney failure, a serious complication of diabetes:

- Receipt of four recommended diabetes services.
- Control of hemoglobin A1c and blood pressure.
- Hospital admissions for uncontrolled diabetes.
- End stage renal disease due to diabetes.

Findings

Management: Receipt of Four Recommended Diabetes Services

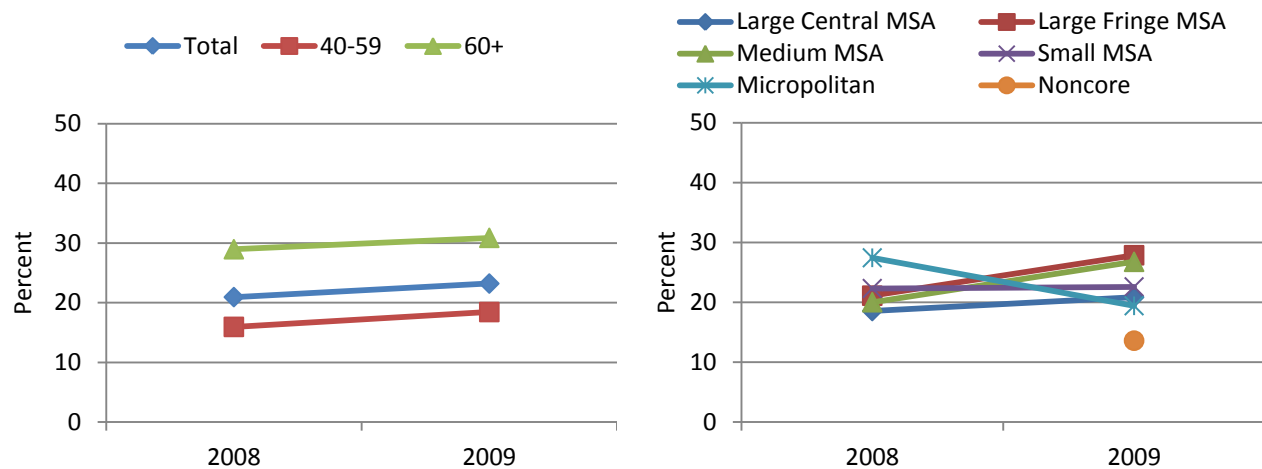
A composite measure is used to track the national rate of receipt of four recommended annual diabetes interventions: at least two HbA1c tests, a foot examination, an eye examination, and a

^{xiv} HbA1c, or glycosylated hemoglobin, is a measure of average levels of glucose in the blood.

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flu shot. These are basic process measures that provide an assessment of the quality of diabetes management. This diabetes composite measure differs from the composite presented in previous years. To be more consistent with current recommendations, the required frequency of HbA1c tests was increased in 2011 to two per year and receipt of a flu shot was added.

Figure 2.15. Adults age 40 and over with diagnosed diabetes who reported receiving four recommended services for diabetes in the calendar year (2+ hemoglobin A1c tests, foot exam, dilated eye exam, and flu shot), by age and residence location, 2008-2009



Key: MSA = metropolitan statistical area.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2008-2009.

Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.

Note: Data include people with both type 1 and type 2 diabetes. Rates are age adjusted to the 2000 U.S. standard population. The noncore sample size in 2008 did not meet requirements for statistical reliability, data quality, or confidentiality.

- Among adults age 40 and over with diagnosed diabetes, only 23% received all four recommended services in 2009 (Figure 2.15).
- In both years, adults ages 40-59 were less likely to receive recommended care for diabetes than adults age 60 and over.
- In 2009, residents of micropolitan and noncore areas were less likely to receive recommended care for diabetes than residents of large fringe metropolitan areas.

Also, in the NHDR:

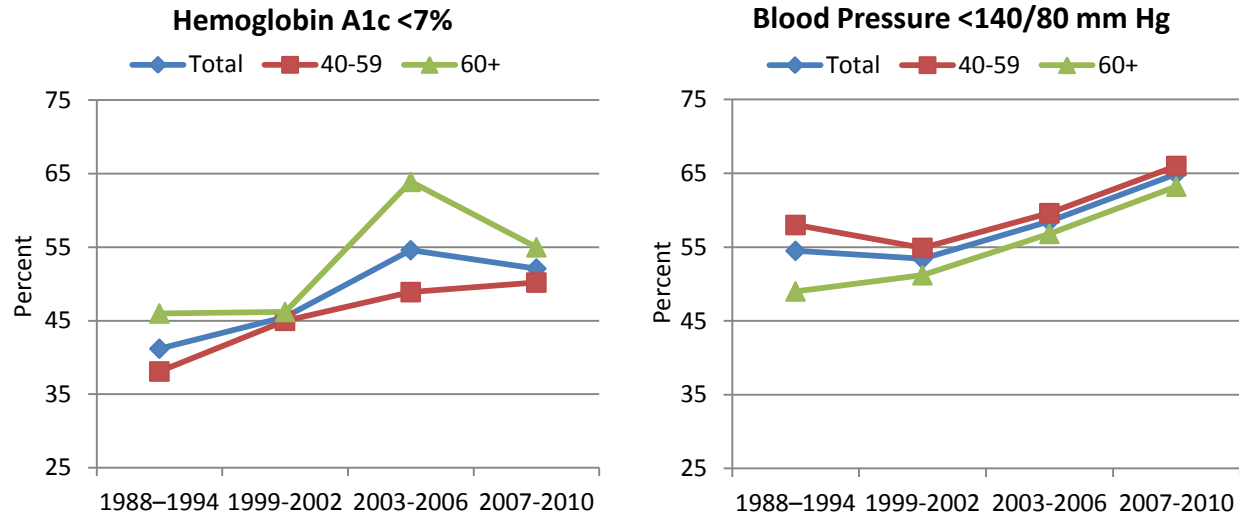
- In 2008 and 2009, poor, low-income, and middle-income adults were less likely to receive recommended care for diabetes than high-income adults.

Outcome: Control of Hemoglobin A1c and Blood Pressure

People diagnosed with diabetes are often at higher risk for other cardiovascular risk factors, such as high blood pressure and high cholesterol. Having these conditions in combination with diagnosed diabetes increases the likelihood of complications, such as heart and kidney diseases, blindness, nerve damage, and stroke. Patients who manage their diagnosed diabetes and maintain an HbA1c level <7%, total cholesterol <200 mg/dL, and blood pressure <140/80 mm Hg can decrease these risks.

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Figure 2.16. Adults age 40 and over with diagnosed diabetes with hemoglobin A1c and blood pressure under control, by age, 1988-1994, 1999-2002, 2003-2006, and 2007-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1988-1994, 1999-2002, 2003-2006, and 2007-2010.

Denominator: Civilian noninstitutionalized population with diagnosed diabetes, age 40 and over.

Note: Age adjusted to the 2000 U.S. standard population using two age groups: 40-59 and 60 and over.

- Among adults age 40 and over with diagnosed diabetes, only 52% achieved HbA1c less than 7% and about 65% achieved blood pressure less than 140/80 mm Hg in 2007-2010 (Figure 2.16). Improvements were observed among all age groups.

Also, in the NHDR:

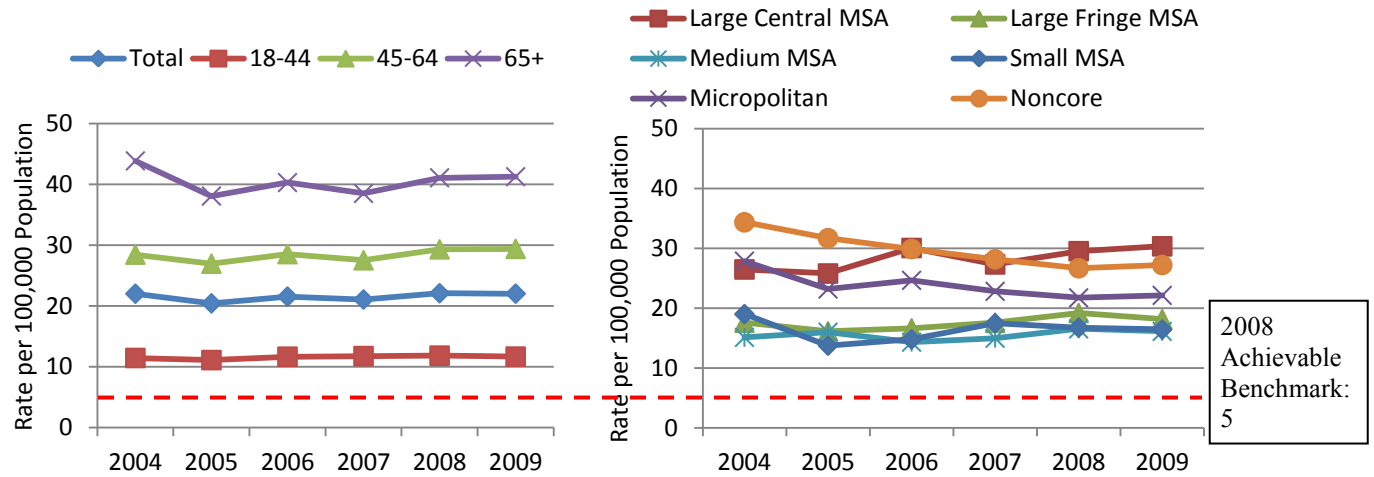
- In most years, Mexican Americans were less likely to achieve HbA1c control than non-Hispanic Whites. Non-Hispanic Blacks were less likely to achieve blood pressure control than non-Hispanic Whites.

Outcome: Admissions for Uncontrolled Diabetes

Individuals who do not achieve good control of their diabetes may develop symptoms that require hospitalization to correct. Admission rates for uncontrolled diabetes may be reduced by better outpatient treatment and tighter adherence to diet and medications for diabetes.

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Figure 2.17. Hospital admissions for uncontrolled diabetes per 100,000 population, age 18 and over, by age and residence location, 2004-2009



Key: MSA = metropolitan statistical area.

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators version 4.1, 2004-2009.

Denominator: U.S. resident population age 18 and over.

Note: For this measure, lower rates are better. Data are adjusted for age and gender. Rates by age are not age adjusted.

- Between 2004 and 2009, the overall adult admission rate for uncontrolled diabetes did not change significantly (Figure 2.17). Rates increased among patients ages 45-64 and residents of large central, large fringe, and medium metropolitan areas. Only residents of micropolitan and noncore areas experienced declines.
- In all years, adults ages 45-64 and 65 and over had higher admission rates for uncontrolled diabetes than adults ages 18-44.
- In all years, residents of large central metropolitan areas and noncore areas had higher rates than residents of large fringe metropolitan areas.
- The 2008 top 4 State achievable benchmark was 5 per 100,000 population.^{xv} Only residents of micropolitan and noncore areas show progress toward the benchmark but still could not achieve it for about 16 years.

Also, in the NHDR:

- In all years, the rate of hospital admissions for uncontrolled diabetes was higher for Blacks and Hispanics compared with Whites.
- In all years, the rate of hospital admissions for uncontrolled diabetes was higher for adults living in communities with median household incomes in the first, second, and third quartiles than for people living in communities in the fourth quartile.

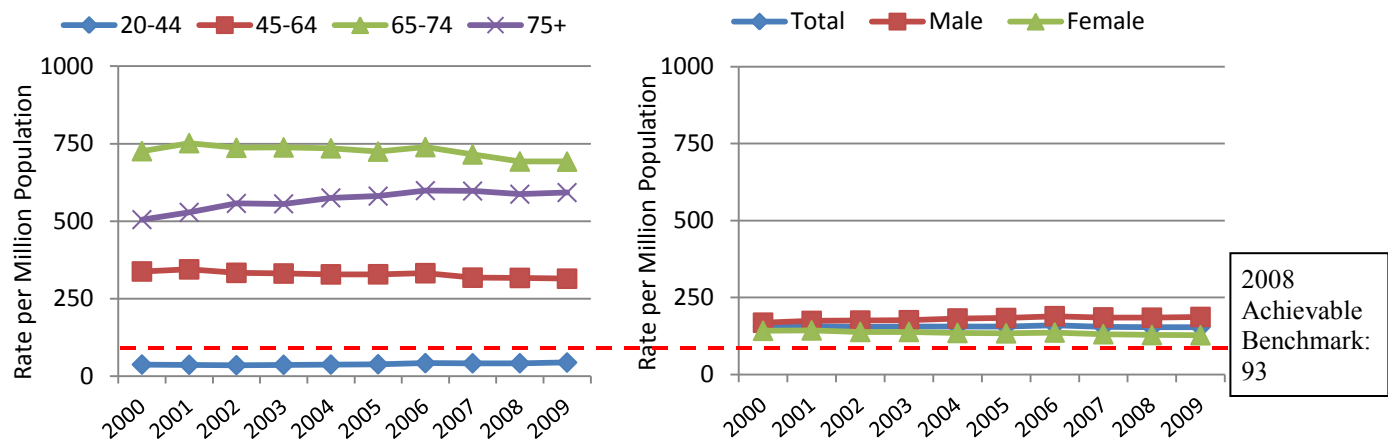
^{xv} The top 4 States that contributed to the achievable benchmark are Colorado, Hawaii, Utah, and Vermont.

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Outcome: End Stage Renal Disease Due to Diabetes

Diabetes is the most common cause of kidney failure. Keeping blood sugar levels under control can prevent or slow the progression of kidney disease due to diabetes. In addition, when kidney disease is detected early, medication can slow the disease's progress. If it is detected late, progression to ESRD requiring dialysis is common. While some cases of kidney failure due to diabetes cannot be avoided, other cases reflect inadequate control of blood sugar or delayed detection and treatment of early kidney disease due to diabetes.

Figure 2.18. End stage renal disease due to diabetes per million population, by age and gender, 2000-2009



Source: National Institute of Diabetes and Digestive and Kidney Diseases, U.S. Renal Data System, 2000-2009.

Denominator: U.S. resident population.

Note: For this measure, lower rates are better. Rates are age adjusted.

- Between 2000 and 2009, the overall incidence of ESRD due to diabetes did not change (Figure 2.18). The rate increased among people ages 20-44 and age 75 and over. It also increased among males and fell among females.
- In all years, people age 45 and over had higher rates of ESRD due to diabetes than people ages 20-44. Males had higher rates than females.
- The 2008 top 5 State achievable benchmark was 93 per million population.^{xvi} People ages 20-44 have achieved the benchmark. Of the other age groups and genders, only women are moving toward the benchmark but still will not achieve it for 21 years.

Also, in the NHDR:

- In all years, AI/ANs, APIs, and Blacks had higher rates of ESRD due to diabetes than Whites and Hispanics had higher rates than non-Hispanic Whites.

^{xvi} The top 5 States that contributed to the achievable benchmark are Alaska, Montana, New Hampshire, Oregon, and Wyoming.

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HIV and AIDS

Importance

Mortality

Number of deaths of people with AIDS (2009).....17,774 (CDC, 2012)

Prevalence

Number of people living with HIV infection (2009).....784,701 (CDC, 2012)

Number of people living with AIDS (2009).....476,732 (CDC, 2012)

Incidence

Number of new HIV diagnoses (2010).....47,129 (CDC, 2012)

Number of new AIDS diagnoses (2010).....33,015 (CDC, 2012)

Cost

Federal spending on HIV/AIDS care, cash and housing assistance, prevention, and research (fiscal year 2013 est.)..... \$22 billion (KFF, 2012)

HIV is a virus that kills or damages cells of the body's immune system. AIDS is the most advanced stage of HIV infection. HIV can be spread through unprotected sex with an infected person, sharing of drug needles, or contact with the blood of an infected person. In addition, women with HIV can pass the virus to their babies during pregnancy, childbirth, or breastfeeding.

The impact of HIV infection and AIDS is disproportionately higher for racial and ethnic minorities and people of lower income and education levels. Although access to care has improved, research shows that Blacks, Hispanics, women, and uninsured people with HIV remain less likely to have access to care and less likely to have optimal patterns of care (Tobias, et al., 2007).

The spread of HIV is linked to complex social and economic factors, including:

- Poverty,
- Concentration of the virus in specific geographic areas and smaller sexual networks,
- Sexually transmitted co-infections,
- Stigma (negative attitudes, beliefs, and actions directed at people living with HIV/AIDS or directed at people who engage in behaviors that might put them at risk for HIV), and
- Injection and noninjection drug use and associated behaviors (CDC, 2010).

According to the Centers for Disease Control and Prevention (CDC), HIV and AIDS disproportionately affect Blacks in the United States. In 2009, Blacks represented 14% of the U.S. population but accounted for 44% of all diagnoses of new HIV infections (CDC, 2012). The HIV/AIDS epidemic is also a serious threat to the Hispanic community. An estimated 20% of new HIV infections occurred among Hispanics in 2009, which is three times the rate of Whites

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(CDC, 2012). In addition to being seriously affected by HIV, Hispanics continue to face challenges in accessing health care, especially preventive services and HIV treatment.

Undocumented immigrants face an even greater challenge in accessing care and information regarding HIV and AIDS, but data are limited on HIV infection rates of undocumented immigrants (Carrillo & DeCarlo, 2003). In 2007, HIV/AIDS was the fourth leading cause of death among Hispanic men and women ages 35-44 (CDC, 2011a). Having Medicaid and a usual source of care decreased the likelihood of delaying care for HIV, but research shows that delay in care is still greater for Hispanics and Blacks (Cunningham, et al., 2006).

Another group that is severely affected by HIV includes gay, bisexual, and other men who have sex with men (MSM). MSM represent 2% of the U.S. population and is the only risk group in which new HIV infections have been gradually increasing since the 1990s. MSM have constantly represented the largest percentage of people diagnosed with AIDS and people with an AIDS diagnosis who have died. In 2009, MSM accounted for more than half (61%) of all new HIV infections in the United States (CDC, 2012).

The White House Office of National AIDS Policy launched the National HIV/AIDS Strategy (NHAS) in July 2010. The NHAS is a comprehensive plan focused on: (1) reducing the number of people who become infected with HIV, (2) increasing access to care and optimizing health outcomes for people living with HIV, and (3) reducing HIV-related health disparities. The plan serves as a roadmap for policymakers, partners in prevention, and the public on steps the United States must take to lower HIV incidence, get people living with HIV into care, and reduce HIV-related health disparities.

Measures

This year, one measure is presented focusing on the quality of preventive care for HIV-infected individuals:

- New AIDS cases.

Five measures are presented on access to care, retention in care and treatment, and prevention of opportunistic infections in HIV patients:

- Adult HIV patients who had at least two outpatient visits during the year.
- Adult HIV patients who received two or more CD4 tests during the year.
- Adult HIV patients who received highly active antiretroviral therapy (HAART).
- Eligible patients receiving prophylaxis for *Pneumocystis pneumonia* (PCP).
- Eligible patients receiving prophylaxis for *Mycobacterium avium* complex (MAC).

In addition, one measure is presented on HIV infection deaths.

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Findings

Management: HIV Patients Receiving Care

Management of chronic HIV disease includes outpatient and inpatient services. Without adequate treatment, as HIV disease progresses, CD4 cell counts fall and patients become increasingly susceptible to opportunistic infections.

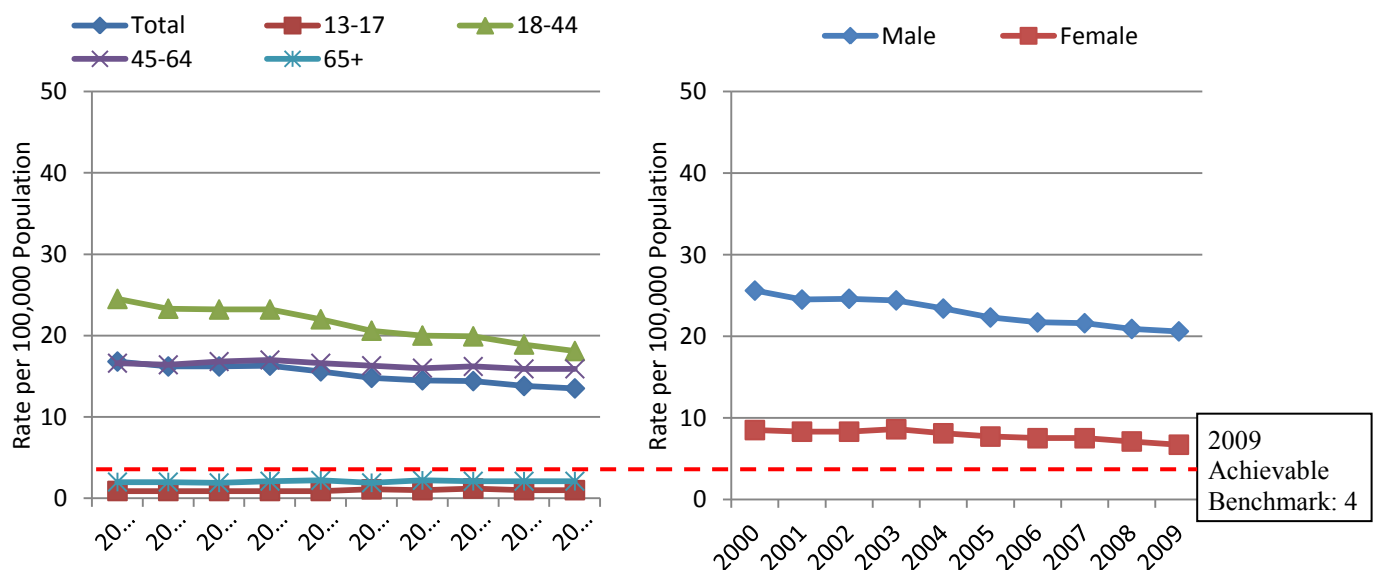
HIV/AIDS core clinical performance measures are indicators for use in monitoring the quality of care provided to adults and adolescents living with HIV. Based on the set of quality measures developed by the HIV/AIDS Bureau of the Health Resources and Services Administration (HRSA), performance can be measured for various HIV prevention and treatment services. Services needed by patients with HIV include:

- Two or more medical visits in an HIV care setting in the measurement year.
- Two or more CD4 cell counts performed in the measurement year.
- HAART for patients with AIDS.
- PCP prophylaxis for patients with CD4 cell count below 200 and MAC prophylaxis for patients with CD4 cell count below 50.

Outcome: New AIDS Cases

Changes in HIV infection rates reflect changes in behavior by at-risk individuals that may only partly be influenced by the health care system. However, individual and community programs have shown progress in influencing behavior change. Changes in the incidence of new AIDS cases are affected by changes in HIV infection rates, screening and early detection of HIV disease, and availability of appropriate treatments for HIV-infected individuals.

Figure 2.19. New AIDS cases per 100,000 population age 13 and over, by age and gender, 2000-2009



Source: Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention, HIV/AIDS Surveillance System, 2000-2009.

Denominator: U.S. population age 13 and over.

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- Overall, in 2009, the total rate of new AIDS cases was 13.5 per 100,000 population (Figure 2.19).
- From 2000 to 2009, rates of new AIDS cases decreased overall and for almost all age groups and both genders. There were no statistically significant changes in rates for ages 13-17 and age 65+.
- In 2009, people ages 18-44 had a higher rate of new AIDS cases than other age groups and males had a higher rate than females.
- The 2009 top 4 State achievable benchmark for new AIDS cases was 4 per 100,000 population.^{xvii} People ages 13-17 and 65 and over have achieved the benchmark, but there is no progress toward the benchmark for other age groups. At the current rate, it would take females 13 years to reach the benchmark and males more than 20 years.

Also, in the NHDR:

- In 2009, non-Hispanic Blacks and Hispanics had higher rates of new AIDS cases than non-Hispanic Whites.

Management: Recommended Care for HIV

Currently, national data on HIV care are not routinely collected. HIV measures tracked in the NHQR are from the HIV Research Network, which consists of 18 medical practices across the United States that treat large numbers of patients living with HIV. Data from the voluntary HIV Research Network are not nationally representative of the level of care received by everyone in the United States living with HIV.

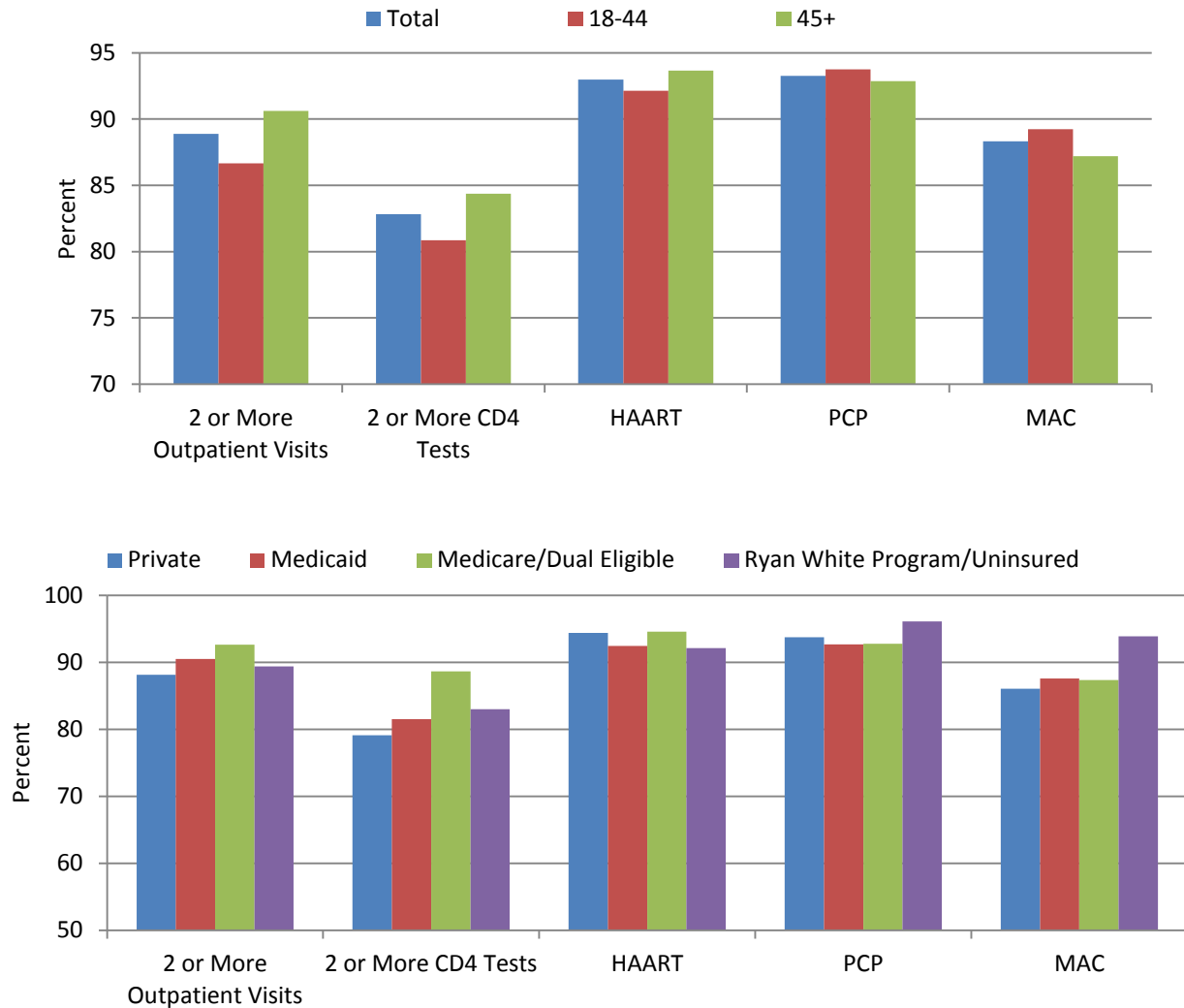
HIV Research Network data represent only patients with HIV who are actually receiving care (about 14,000 patients per year) and do not represent patients who do not receive care. Furthermore, data shown below are not representative of the HIV Research Network as a whole because they represent only a subset of network sites that have the most complete data.

Below are data from the HIV Research Network that capture four of the HRSA quality measures. In addition, when CD4 cell counts fall below 50, medicine to prevent development of disseminated MAC infection is routinely recommended (Yeargin, et al., 2003), which is also tracked in the reports.

^{xvii} The top 4 States that contributed to the achievable benchmark are Iowa, New Hampshire, Utah, and Wisconsin.

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Figure 2.20. HIV patients who received recommended care, by age and expected payment source, 2009



Key: HAART = highly active antiretroviral therapy; PCP = *Pneumocystis pneumonia*; MAC = *Mycobacterium avium* complex.

Source: Agency for Healthcare Research and Quality, HIV Research Network, 2009.

Note: For HAART measure, adult HIV patients had to be enrolled in an HIV Network clinic, receive at least one CD4 test, and have at least one outpatient visit in addition to having at least one CD4 test result of 350 or less.

- Overall, in 2009, 88.9% of people with HIV had two or more outpatient visits during the year, and 82.8% of people with HIV had two or more CD4 tests during the year (Figure 2.20). In addition, 93.0% of people with HIV received HAART. A slightly higher percentage (93.3%) of people with HIV who had a CD4 count less than 200 received PCP prophylaxis and 88.3% of people with HIV received MAC prophylaxis.
- In 2009, there were no statistically significant differences by age or insurance type in the percentage of people with HIV receiving recommended services.

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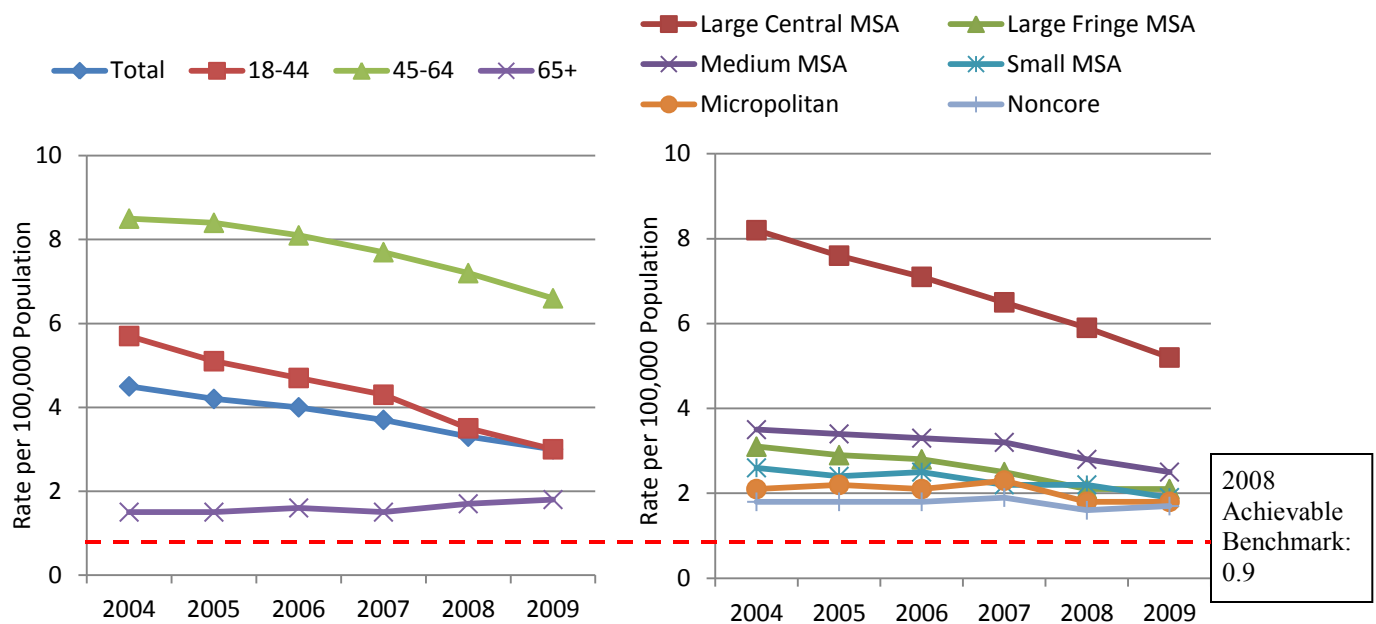
Also, in the NHDR:

- In 2009, there were no statistically significant differences by race/ethnicity or gender in the percentage of people with HIV receiving recommended services.

Outcome: Deaths of People With HIV Infection

Improved management of HIV infection has contributed to declines in the number of new AIDS cases in the United States since the 1990s (CDC, 2005). HIV infection deaths reflect a number of factors, including underlying rates of HIV risk behaviors, prevention of HIV transmission, early detection and treatment of HIV disease, and management of AIDS and its complications.

Figure 2.21. HIV infection deaths per 100,000 population, by age and residence location, 2004-2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality, 2004-2009.

Denominator: U.S. population.

Note: For this measure, lower rates are better. Rates are age adjusted to the 2000 U.S. standard population. Age data are unadjusted. Respondents for which age is not reported are not included in the age adjustment calculations and are excluded from numerators.

- Overall, in 2009, the total rate of HIV infection deaths was 3 per 100,000 population (Figure 2.21).
- From 2004 to 2009, the rate of HIV infection deaths decreased for adults ages 18-44 and 45-64, but it increased for those age 65 and over.
- In 2009, the rate of HIV infection deaths for adults ages 45-64 (6.6 per 100,000 population) was higher than for adults ages 18-44 (3 per 100,000 population), but those age 65 and over (1.8 per 100,000) had a lower rate than those ages 18-44.
- From 2004 to 2009, the rate of HIV infection deaths decreased for adults living in large central, large fringe, medium, and small metropolitan areas.

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- In 2009, the rate of HIV infection deaths for people living in medium metropolitan (2.5 per 100,000 population) and large central metropolitan (5.2 per 100,000 population) areas was higher compared with those living in large fringe areas (2.1 per 100,000 population). However, it was lower for those living in micropolitan (1.8 per 100, 000 population) and noncore (1.7 per 100, 000 population) areas compared with those in large fringe areas.
- The 2008 top 4 State achievable benchmark for HIV deaths was 0.9 per 100,000 population.^{xviii} At the current rate, adults ages 18-44 would reach the benchmark in 5 years, while adults ages 45-64 would take 39 years. Adults age 65 and over are moving away from the benchmark. Residents of large fringe metropolitan areas could reach the benchmark in 5 years, while those living in noncore areas would take 24 years.

Also, in the NHDR:

- HIV infection death rates are decreasing for all racial/ethnic groups and both genders.
- In 2009, the HIV infection death rate was higher for males than for females.

^{xviii} The top 4 States that contributed to the achievable benchmark are Minnesota, Oregon, Utah, and Wisconsin.

Maternal and Child Health

Importance

Mortality

Number of maternal deaths (2007) 548 (Xu, et al., 2010)
Number of infant deaths (2010 prelim.) 24,548 (Murphy, et al., 2012)

Demographics

Number of children^{xix} (2010) 73,904,493 (U.S. Census Bureau, 2010)
Number of babies born in United States (2010) 4,000,279 (Hamilton, et al., 2011)

Cost

Total cost of health care for children (2009) \$143.3 billion (AHRQ, 2009)
Cost-effectiveness of vision screening for children \$0-\$14,000/QALY (Maciosek, et al., 2006)
Cost-effectiveness of childhood immunization series (2001) approx. \$16 per \$1 spent (Zhou, et al., 2005)

Measures

The NHQR and NHDR track several prevention, treatment, and outcome measures related to maternal and child health care. The measures highlighted in this section are:

- Prenatal care.
- Receipt of recommended immunizations by young children.
- Children's vision screening.
- Well visits in the last year.
- Receipt of meningococcal vaccine by adolescents.

Findings

New

Prevention: Early and Adequate Prenatal Care

The timing of initiation and the quality and quantity of prenatal care (PNC) may influence pregnancy outcomes, in particular the occurrence of preterm birth and low birth weight (Anum, et al.; 2010; Debiec, et al., 2010; Cox, et al., 2011; AAP, 2007). In the past, the NHQR and NHDR have followed a measure of PNC access in the first trimester as a key maternal and child health preventive measure. Because this measure does not take into account whether women then receive additional PNC throughout the pregnancy, we now report on a measure of early and adequate PNC.

One of the Healthy People 2020 objectives is that 77.6% of pregnant women receive early and adequate PNC, based on the Adequacy of Prenatal Care Utilization Index. This index looks at both initiation of PNC and number of visits; thus, early and adequate PNC is defined as PNC initiated by month 4 of the pregnancy and in which the woman also had at least 80% of the number of expected PNC visits.

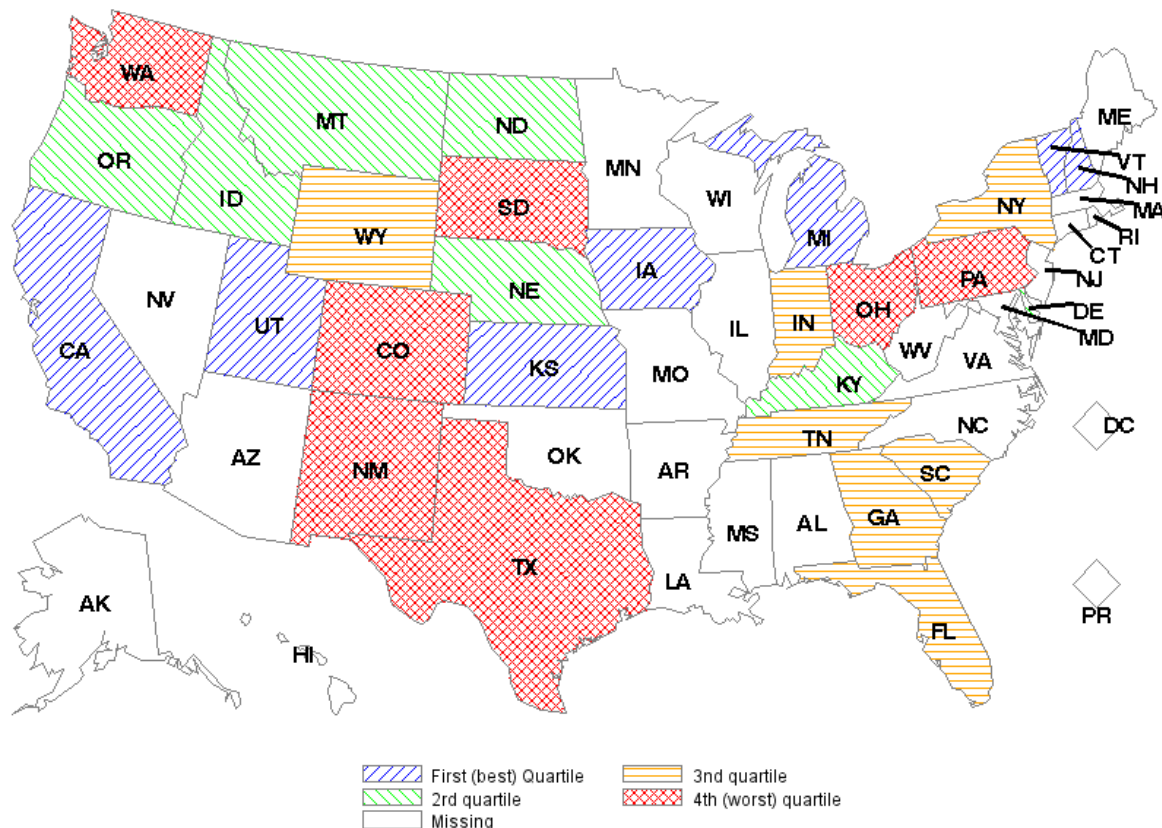
^{xix} In this report, children are defined as individuals under age 18, unless otherwise specified.

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The target number of PNC visits is based on when PNC started and on the infant's gestational age at birth. Because of consistency problems between the 1998 and 2003 versions of birth certificates, PNC timing and adequacy were evaluated only for the 28 States using the 2003 standard birth certificate for all of 2009. Because we have data for only 28 States, national estimates were not generated. However, these 28 States accounted for 66% of live births in the United States in 2009.

The data are shown in the map below. This map shows overall State rankings by quartiles in the percentage of infants born to women who received early and adequate PNC. State values ranged from 60.8% to 86.5%.

Figure 2.22. Infants born in 2009 whose mothers had obtained early and adequate prenatal care, by State quartiles



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics System, 2009.

- Interquartile ranges were as follows:
 - 1st quartile (best): 78.0%-86.5% (CA, IA, KS, MI, NH, UT, VT).
 - 2nd quartile (second best): 73.9%-75.9%.
 - 3rd quartile (second worst): 69.4%-73.2%.
 - 4th quartile (worst): 60.8%-68.0% (CO, NM, OH, PA, SD, TX, WA).
- There was no clear pattern based on geographic region (Figure 2.22).

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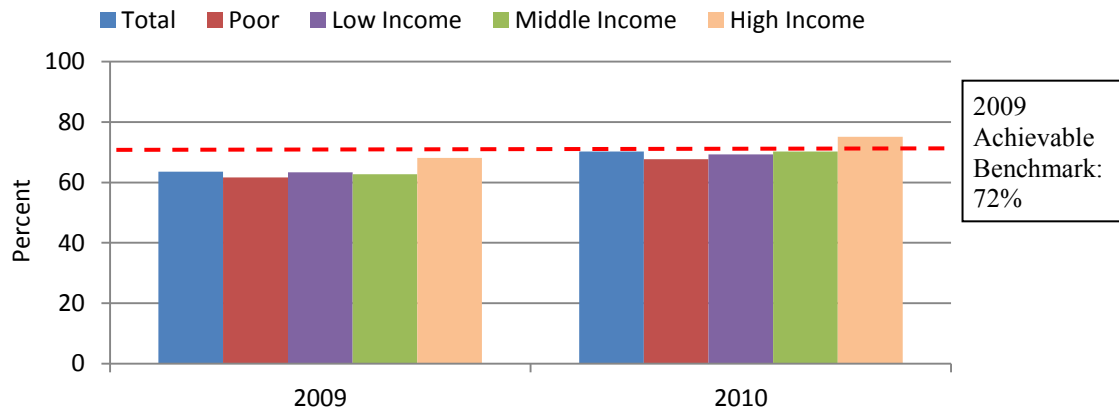
Also, in the NHDR:

- Within the individual States, the NHDR mapped the absolute differences between White and Black infants (based on the reported race of the mother) in the percentage whose mothers had obtained early and adequate PNC in 2009. States ranged from a minimum difference between Whites and Blacks of 2.9% to a maximum difference of 28.7%.

Prevention: Receipt of Recommended Immunizations by Young Children

Immunizations are important in reducing mortality and morbidity. They protect recipients from illness and protect others in the community who are not vaccinated. Beginning in 2007, recommended vaccines for children that should have been completed by ages 19-35 months included diphtheria-tetanus-pertussis vaccine, polio vaccine, measles-mumps-rubella vaccine, *Haemophilus influenzae* type B vaccine, hepatitis B vaccine, varicella vaccine, and pneumococcal conjugate vaccine. These vaccines constitute the 4:3:1:3:3:1:4 vaccine series tracked in Healthy People 2020. The Healthy People 2020 target is 80% coverage in the population ages 19-35 months.

Figure 2.23. Children ages 19-35 months who received the 4:3:1:3:3:1:4 vaccine series, by income, 2009-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2009-2010.

Denominator: U.S. civilian noninstitutionalized population ages 19-35 months.

- In 2010, 70.2% of children ages 19-35 months had received all recommended vaccinations (Figure 2.23).
- In both years, children from high-income households were more likely to receive all the recommended vaccinations than those from poor, low-income, and middle-income households.
- The 2009 top 6 State achievable benchmark was 72%.^{xx} At the current rate of improvement, most income groups could achieve the benchmark in a year. Children from high-income groups have already achieved the benchmark.

^{xx} The top 6 States that contributed to the achievable benchmark are California (tie), Louisiana, Maryland, Massachusetts, New Hampshire, and Ohio (tie).

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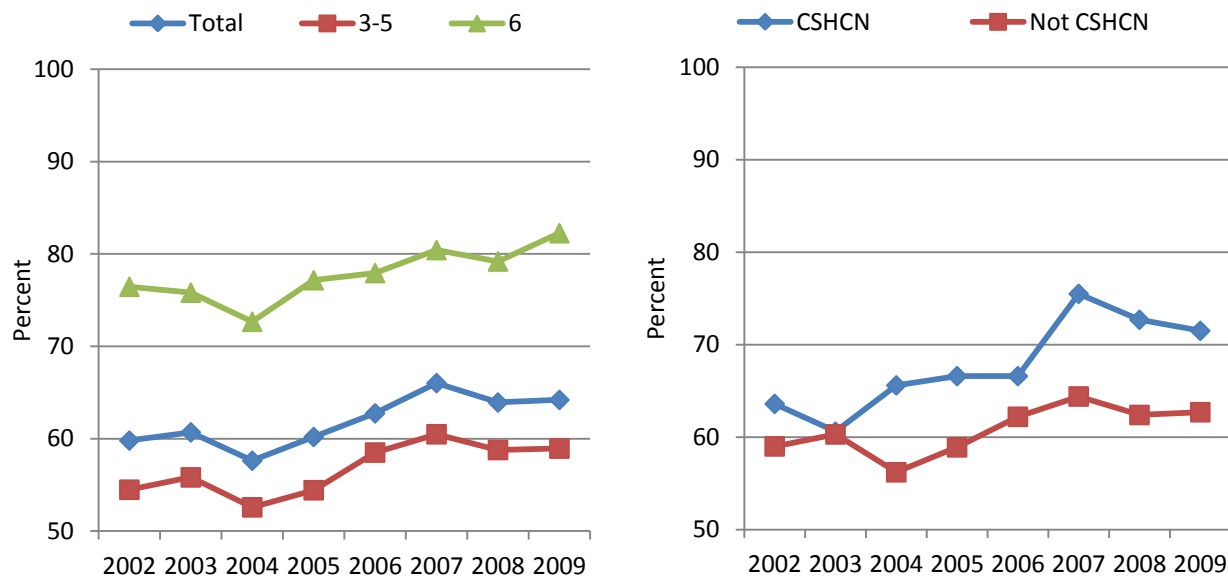
Also, in the NHDR:

- In both years, Black children were less likely than White children to receive all recommended vaccinations.

Prevention: Children's Vision Screening

Vision checks for children may detect problems of which children and their parents were previously unaware. Early detection also improves the chances that corrective treatments will be successful.

Figure 2.24. Children ages 3-6 who ever had their vision checked by a health provider, by age and special health care needs status, United States, 2002-2009



Key: CSHCN = Children with special health care needs.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: U.S. civilian noninstitutionalized population ages 3-6.

Note: For details on CSHCN, see the MEPS entry in the Detailed Methods appendix.

- In 2009, 64.2% of children ages 3-6 had their vision checked by a health provider (Figure 2.24). Improvements were observed in both age groups and special health care needs status groups.
- In all years, children ages 3-5 years were less likely to have their vision checked than those age 6 years.
- In 5 of the 8 years from 2002 to 2009, children without special health care needs were less likely to have their vision checked than those with such needs.

Also, in the NHDR:

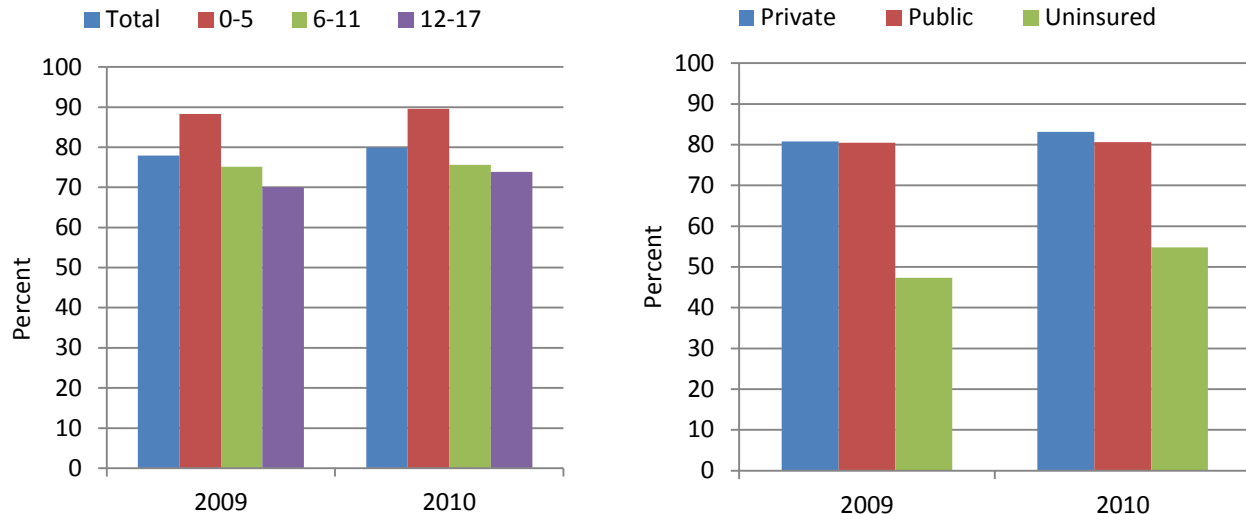
- In 3 of the 8 years from 2002 to 2009, Hispanic children were less likely to have their vision checked than non-Hispanic White children.
- In 4 of the 8 years from 2002 to 2009, children from poor, low-income, and middle-income households were less likely to have their vision checked than children from high-income households.

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Prevention: Well Visits by Children in the Last Year

The American Academy of Pediatrics recommends annual preventive health care visits for all children (AAP, 2008). The AAP recommends regular preventive health care visits for children of all ages. Current recommendations are for 7 well child visits prior to 12 months of age; 5 well child visits between 12 and 30 months of age, inclusive; and one well child visit per year from 3 years of age on.

Figure 2.25. Children ages 0-17 with a well visit in the last 12 months, by age and insurance, 2009-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009-2010.

Denominator: Civilian noninstitutionalized population ages 0-17.

- In 2010, 79.9% of children ages 0-17 had a wellness checkup in the last 12 months (Figure 2.25).
- In both years, children ages 0-5 were more likely to have a well visit than those ages 6-11 and 12-17.
- In both years, children with private insurance were more likely to have a well visit than uninsured children.

Also, in the NHDR:

- In 2009 and 2010, non-Hispanic Black children had higher rates of well visits compared with their White counterparts, while Hispanic children had lower rates than non-Hispanic White children.
- In both years, children from high-income households were more likely to have well visits than those from poor, low-income, and middle-income households.

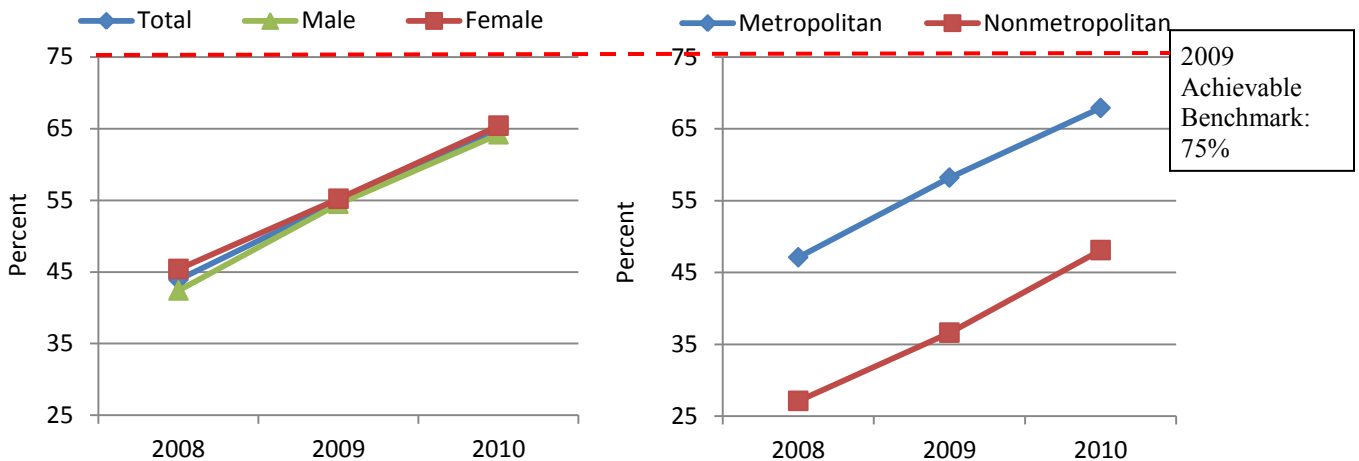
Prevention: Receipt of Meningococcal Vaccine by Adolescents

According to the 2010 Census, individuals ages 10-14 years made up 6.7% of the U.S. population while those ages 15-19 years made up 7.1% of the population (U.S. Census Bureau, 2010). Youth in these age groups are at risk of contracting meningitis.

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Meningitis is an infection of the membranes that cover the brain and spinal cord. If meningitis is caused by bacteria, it is often life threatening. Meningococcal diseases are infections caused by the bacteria *Neisseria meningitidis*. Although *Neisseria meningitidis* can cause various types of infections, it is most important as a potential cause of meningitis. It can also cause meningococemia, a serious bloodstream infection. The meningococcal vaccine can prevent most cases of meningitis caused by *Neisseria meningitidis* and is recommended for all children ages 11-12 years. Effective in January 2011, a second dose is recommended at age 16.

Figure 2.26. Adolescents ages 13-15 who ever received at least 1 dose of the meningococcal vaccine, by gender and residence location, 2008-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics and National Center for Immunization and Respiratory Diseases, National Immunization Survey, 2008-2010.

- In 2010, 64.8% of adolescents ages 13-15 had ever received at least 1 dose of the meningococcal vaccine (Figure 2.26).
- From 2008 to 2010, there were no statistically significant gender differences among adolescents ages 13-15 who received the meningococcal vaccine.
- In all years, residents of nonmetropolitan areas were less likely to receive the meningococcal vaccine than those living in metropolitan areas.
- The 2009 top 5 State achievable benchmark was 75%.^{xxi} At the current rate, most groups could achieve the benchmark in a year.

Also, in the NHDR:

- In 2008 and 2010, Hispanic adolescents were more likely to receive the meningococcal vaccine than non-Hispanic White adolescents.
- In all years, adolescents from high-income households were more likely to receive the meningococcal vaccine than those from poor, low-income, and middle-income households.

^{xxi} The top 5 States that contributed to the achievable benchmark are the District of Columbia, Massachusetts, New Jersey, North Dakota, and Rhode Island.

Mental Health and Substance Abuse

Importance

Mortality

Number of deaths due to suicide (2010 prelim.)..... 37,793 (Murphy, et al., 2012)
Rank among causes of death in the United States—suicide
(2010 prelim.) 10th (Murphy, et al., 2012)
Alcohol-impaired driving fatalities (2010) 10,228 (NHTSA, 2010)

Prevalence

People age 12 and over with alcohol and/or illicit drug
dependence or abuse in the past year (2010) 23.1 million (9.1%) (CBHSQ, 2010)
Children ages 6-17 who had depression or anxiety
in their lifetime (2007-2008 est. based on parent report)..... 3.8 million (7.8%) (Ghandour, 2011)
Youths ages 12-17 with a major depressive episode during
the past year (2010)..... 1.9 million (8.0%) (CBHSQ, 2010)
Adults age 18 and over with a major depressive episode
during the past year (2010) 15.5 million (6.8%) (CBHSQ, 2010)
Adults with at least one major depressive episode in their
lifetime (2006) 30.4 million (13.9%) (CBHSQ, 2007)

Cost

National expenditures for treatment of mental health and
substance abuse disorders (2014 est.) \$239 billion (CBHSQ, 2008)
Cost-effectiveness of screening and brief counseling
for problem drinking \$0-\$14,000/QALY (Maciosek, et al., 2006)

Measures

The NHQR and NHDR track measures of the quality of treatment for major depression and substance abuse. Mental health treatment includes counseling, inpatient care, outpatient care, and prescription medications. This section highlights four measures of mental health and substance abuse treatment:

- Receipt of treatment for depression.
- Suicide deaths.
- Receipt of treatment for illicit drug use or alcohol problem.
- Completion of substance abuse treatment.

Findings

Treatment: Receipt of Treatment for Depression

Treatment for depression can be very effective in reducing symptoms and associated illnesses and returning individuals to a productive lifestyle. The Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study, funded by the National Institute of Mental Health, was the largest clinical trial ever conducted to help determine the most effective treatment strategies for

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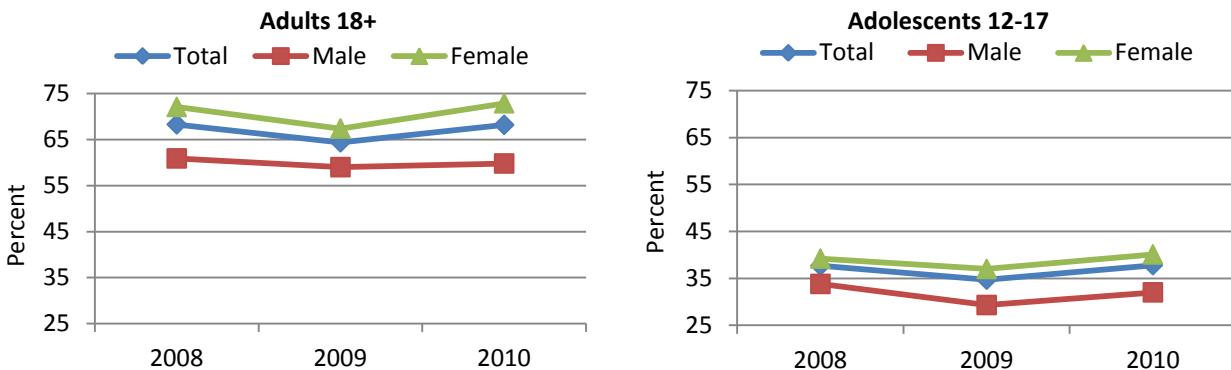
major depressive disorder. It involved both primary care and specialty care settings. Participants included people with complex health conditions, such as multiple concurrent medical and psychiatric conditions.

This study found that between 28% and 33% of participants achieved a symptom-free state after the first round of medication, and nearly 70% achieved remission after 12 months (Insel & Wang, 2009). Strategies for treating depression in primary care settings, such as the collaborative care model, have also been shown to generate positive net social benefits in cost-benefit analyses compared with usual care (Glier, et al., 2010).

Barriers to high-quality mental health care include cost of care, lack of sufficient insurance for mental health services, social stigma, fragmented organization of services, and mistrust of providers. In rural and remote areas, limited availability of skilled care providers is also a major problem. For racial and ethnic populations, these problems are compounded by the lack of culturally and linguistically competent providers.

Barriers can exist for patients across the lifespan. The National Survey of Children's Health (HRSA, 2010) showed that among children with emotional, developmental, or behavioral conditions, 45.6% were receiving needed mental health services, and about half were taking medications. Recent data indicate, however, that service use for mental health is increasing among children (Pfuntner, et al., 2013).

Figure 2.27. Adults (left) and adolescents (right) with a major depressive episode in the past year who received treatment for depression in the past year, by age and gender, 2008-2010



Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008-2010.

Denominator: Adults age 18 and over and adolescents ages 12-17 with a major depressive episode in the past year.

Note: Major depressive episode is defined as a period of at least 2 weeks when a person experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of the symptoms of depression described in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Treatment for depression is defined as seeing or talking to a medical doctor or other professional or using prescription medication in the past year for depression.

- In 2010, only 68% of adults and 38% of adolescents with a major depressive episode received treatment for depression (Figure 2.27).
- In all years, adult males were less likely than adult females to receive treatment for depression. In 2009 and 2010, adolescent males were less likely than adolescent females to receive treatment for depression; in 2008 this difference was not statistically significant.

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Also, in the NHDR:

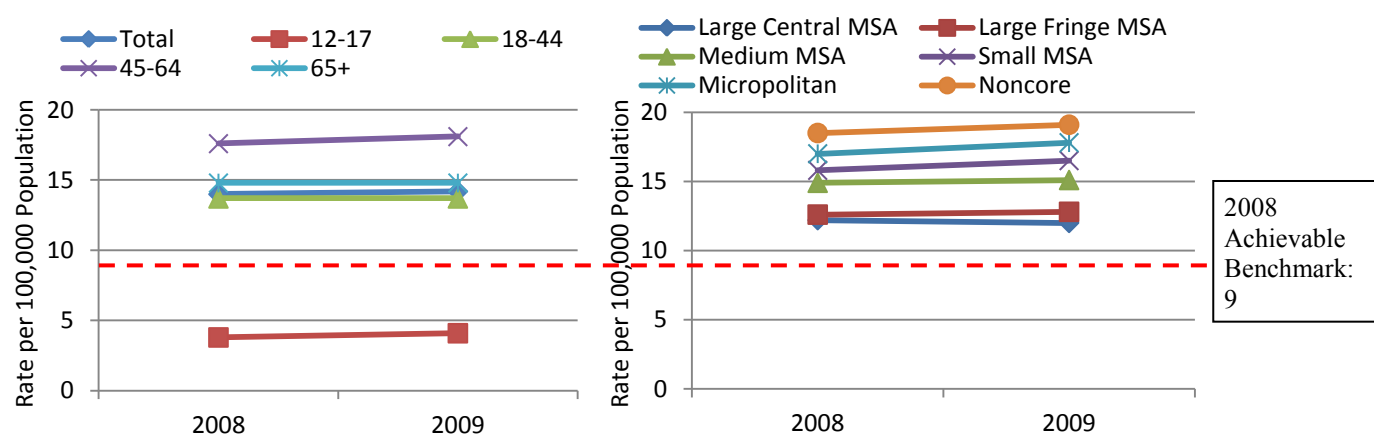
- In all years, Black adults and adolescents were less likely to receive treatment for depression than White adults and adolescents.

New

Outcome: Suicide Deaths

Most individuals who die by suicide have mental illnesses, such as depression or schizophrenia, or have substance abuse problems (Moscicki, 2001). Suicide may be prevented when its warning signs are detected and treated. A previous suicide attempt is among the strongest predictors of subsequent suicide. Cognitive-behavioral therapy can significantly help those who have attempted suicide consider alternative actions when thoughts of self-harm arise and may reduce suicide attempts (Tarrier, et al., 2008). Previous reports tracked suicide death for all ages. Beginning with 2008 and 2009 data shown in the 2012 reports, we track suicide death among people age 12 and over.

Figure 2.28. Suicide deaths per 100,000 population, by age and residence location, 2008-2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System—Mortality, 2008-2009.

Denominator: U.S. population age 12 and over.

Note: For this measure, lower rates are better. Estimates are age adjusted to the 2000 U.S. standard population.

- In 2009, the overall suicide death rate was 14.2 per 100,000 population age 12 and over (Figure 2.28).
- In both years, adolescents ages 12-17 had lower suicide death rates than adults ages 18-44 and adults ages 45-64 had higher suicide death rates than adults ages 18-44.
- In both years, residents of medium and small metropolitan areas, micropolitan areas, and noncore areas had higher suicide death rates than residents of large fringe metropolitan areas (suburbs).
- The 2008 top 5 State achievable benchmark was 9 suicide deaths per 100,000 population.^{xxii} Data are insufficient to assess progress toward the benchmark.

^{xxii} The top 5 States that contributed to the achievable benchmark are Connecticut, District of Columbia, Massachusetts, New Jersey, and New York.

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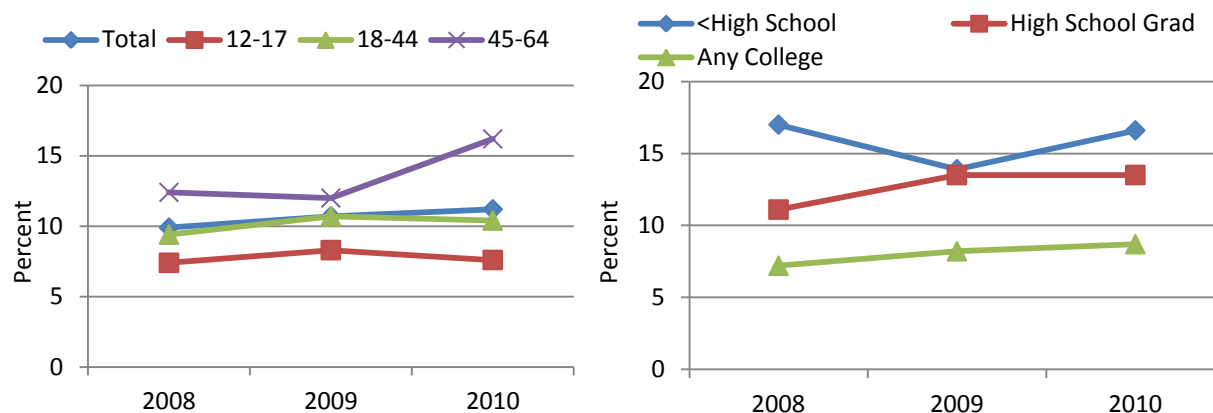
Also, in the NHDR:

- In 2008 and 2009, Blacks, APIs, and AI/ANs had lower suicide death rates than Whites, and Hispanics had lower suicide death rates than non-Hispanic Whites.

Treatment: Receipt of Treatment for Illicit Drug Use or Alcohol Problem

Illicit drug^{xxiii} use is a medical problem that can have a direct toxic effect on a number of bodily organs and exacerbate numerous health and mental health conditions. Alcohol problems also can lead to serious health risks. Heavy drinking can increase the risk of certain cancers and cause damage to the liver, brain, and other organs. In addition, alcohol can cause birth defects, including fetal alcohol spectrum disorders. Alcoholism and illicit drug use increase the risk of death from car crashes and other injuries (Ringold, et al., 2006). Illicit drug use and alcohol problems can be effectively treated at specialty facilities.

Figure 2.29. People age 12 and over who needed treatment for illicit drug use or an alcohol problem and who received such treatment at a specialty facility in the last 12 months, by age and education, 2008-2010



Source: Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2008-2010.

Denominator: People age 12 and over who needed treatment for any illicit drug use or an alcohol problem.

Note: Total includes people age 65 and over, but data were not statistically reliable enough to produce specific estimates for this group. Treatment refers to treatment at a specialty facility, such as a drug and alcohol inpatient and/or outpatient rehabilitation facility, inpatient hospital setting, or mental health center.

- In 2010, only 11% of people age 12 and over who needed treatment for illicit drug use or an alcohol problem received such treatment at a specialty facility (Figure 2.29).
- In all years, people with any college education were less likely to receive needed treatment for illicit drug use or an alcohol problem than high school graduates and people with less than a high school education. Individuals with a lower socioeconomic status may be more likely to receive needed substance abuse treatment due to linkages in service delivery between substance abuse and public assistance services in many States.
- In 2010, adolescents ages 12-17 were less likely to receive treatment than adults ages 18-44 and adults ages 45-64 were more likely to receive treatment than adults ages 18-44.

^{xxiii} Illicit drugs included in this measure are marijuana/hashish, cocaine (including crack), inhalants (e.g., inhalation of various substances other than for intended use, such as toluene), hallucinogens, heroin, and prescription-type psychotherapeutic drugs (nonmedical use).

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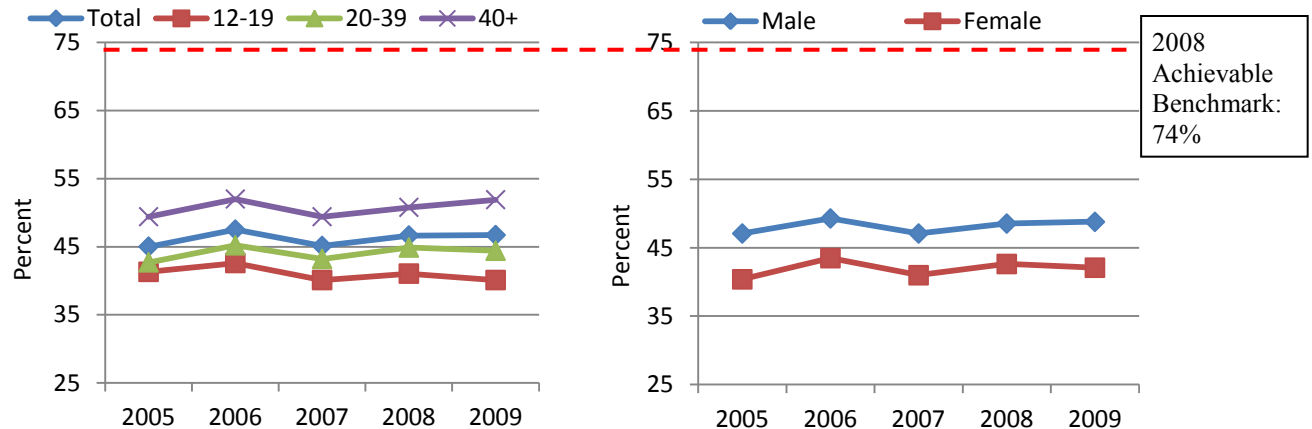
Also, in the NHDR:

- From 2002 to 2007, non-Hispanic Blacks were more likely to receive needed treatment for illicit drug use or an alcohol problem than non-Hispanic Whites.

Treatment: Completion of Substance Abuse Treatment

Completion of substance abuse treatment is strongly associated with improved outcomes, such as long-term abstinence from substance use. Dropout from treatment often leads to relapse and return to substance use.

Figure 2.30. People age 12 and over treated for substance abuse who completed treatment course, by age and gender, 2005-2009



Source: Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set, Discharge Data Set, 2005-2009.

Denominator: Discharges age 12 and over from publicly funded substance abuse treatment facilities.

- From 2005 to 2009, there were no statistically significant changes in the overall percentage of people age 12 and over treated for substance abuse who completed the treatment course (Figure 2.30).
- In all years, people ages 12-19 and 20-39 were less likely than those age 40 and over to complete substance abuse treatment. Females who were treated for substance abuse were significantly less likely than males to complete treatment.
- The 2008 top 5 State achievable benchmark was 74%.^{xxiv} No group showed progress toward the benchmark.

Also, in the NHDR:

- In all years, people with less than a high school education who were treated for substance abuse were significantly less likely than people with any college education to complete treatment.

^{xxiv} The top 5 States that contributed to the achievable benchmark are Colorado, Connecticut, District of Columbia, Mississippi, and Texas.

Musculoskeletal Diseases

Importance

Prevalence

People who have arthritis, gout, lupus, or fibromyalgia (2007-2009) 50 million (22% of U.S. adults) (MMWR, 2010a)
Number of people with low bone density 52 million (Crandall, et al., 2012)

Morbidity

Activity limitations attributable to arthritis, gout, lupus, or fibromyalgia (2007-2009) 21 million (MMWR, 2010a)
Lifetime osteoporosis-related fractures among women over age 50 approx. 50% (NOF)
Lifetime osteoporosis-related fractures among men over age 50 approx. 25% (NOF)

Cost

Total cost of arthritis and other rheumatic conditions (2003) \$128 billion (MMWR, 2007)
Direct medical cost of arthritis and other rheumatic conditions (2003) \$81 billion (MMWR, 2007)
Indirect costs of arthritis and other rheumatic conditions (2003) \$47 billion (MMWR, 2007)
Total cost of osteoporosis-related fractures (2005) \$19 billion (NOF)

Measures

This section tracks several quality measures for prevention and management of musculoskeletal diseases. The arthritis measures are part of the Arthritis Foundation's Quality Indicator Set for Osteoarthritis. A multidisciplinary panel of experts on arthritis and pain reviewed scientific evidence to help develop the Quality Indicator Set (Pencharz & MacLean, 2004). The measures were tracked as part of Healthy People 2010 and continue to be tracked in Healthy People 2020. Osteoporosis measures are usually tracked in this section, but no new data are available for this year's reports.

This section highlights three measures related to quality of care for arthritis:

- Arthritis education for adults with arthritis.
- Counseling about physical activity for adults with arthritis.
- Counseling about weight reduction for overweight adults with arthritis.

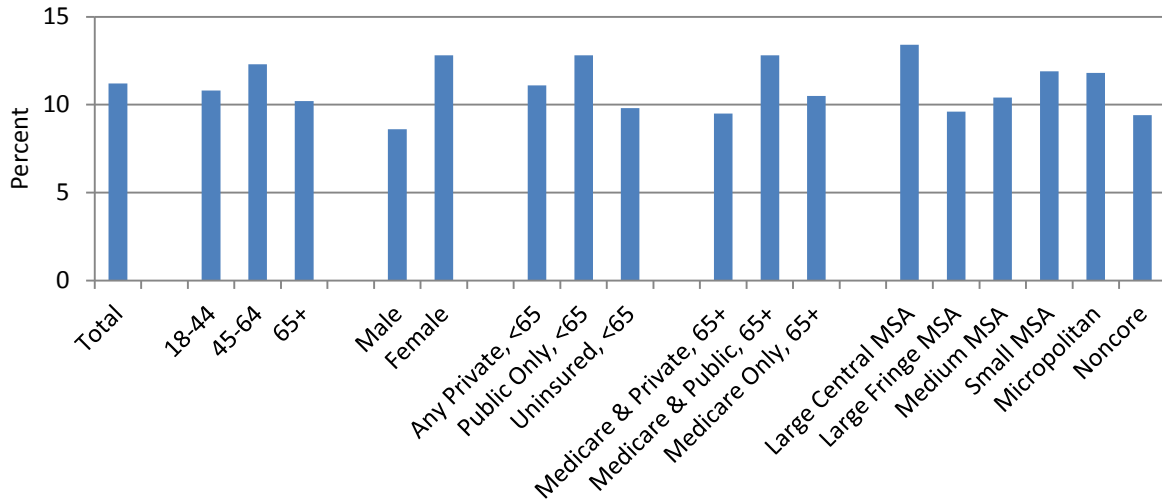
Findings

Management: Arthritis Education for Adults With Arthritis

Osteoarthritis is the most common form of arthritis, affecting about 12% of the general population. Patients with symptomatic osteoarthritis who receive education about the natural history, treatment, and self-management of the disease have better knowledge and self-efficacy and experience less pain and functional impairment (Pencharz & MacLean, 2004).

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Figure 2.31. Adults with doctor-diagnosed arthritis who reported they had effective, evidence-based arthritis education as an integral part of the management of their condition, by age, gender, insurance, and residence location, 2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

Denominator: Civilian noninstitutionalized adults with doctor-diagnosed arthritis.

Note: Estimates are age adjusted to the 2000 U.S. standard population.

- In 2009, only 11% of adults with doctor-diagnosed arthritis received effective, evidence-based arthritis education (Figure 2.31).
- Adults age 65 and over were less likely to receive arthritis education than adults ages 45-64.
- Men were less likely to receive arthritis education than women.

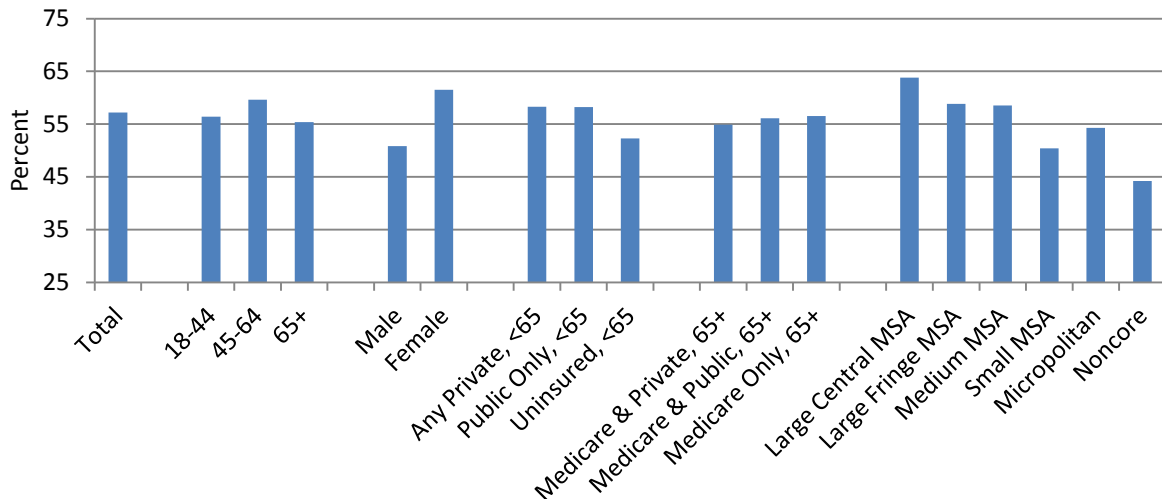
Also, in the NHDR:

- High school graduates were less likely than adults with any college education to receive arthritis education.
- Adults with basic or complex activity limitations were more likely than adults without such limitations to receive arthritis education.

Management: Counseling About Physical Activity for Adults With Arthritis

Patients with symptomatic osteoarthritis should also receive counseling about muscle strengthening and aerobic exercise programs. Such programs can reduce pain and improve functional ability (Pencharz & MacLean, 2004).

Figure 2.32. Adults with doctor-diagnosed arthritis who reported they received health care provider counseling about physical activity or exercise, by age, gender, insurance, and residence location, 2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

Denominator: Civilian noninstitutionalized adults with doctor-diagnosed arthritis.

Note: Estimates are age adjusted to the 2000 U.S. standard population.

- In 2009, 57.2% of adults with doctor-diagnosed arthritis received health care provider counseling about physical activity or exercise (Figure 2.32).
- Men were less likely to receive exercise counseling than women.
- Residents of noncore areas were less likely to receive exercise counseling than residents of large fringe metropolitan areas (suburbs).

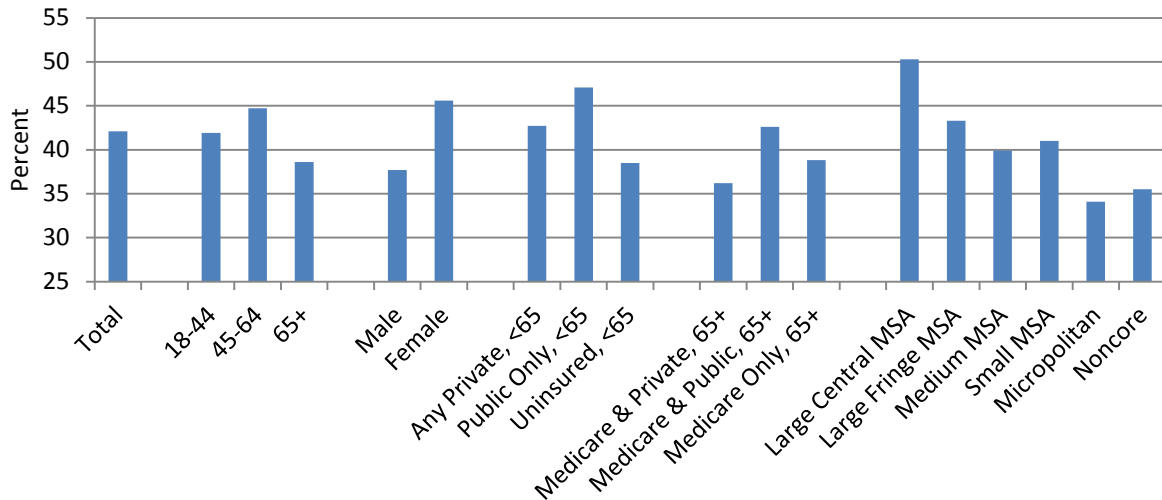
Also, in the NHDR:

- Hispanics were more likely than non-Hispanic Whites to receive exercise counseling.
- Adults with less than a high school education and high school graduates were less likely to receive exercise counseling than adults with any college education.
- Adults with basic or complex activity limitations were more likely than adults without such limitations to receive exercise counseling.

Management: Counseling About Weight Reduction for Overweight Adults With Arthritis

Weight is a risk factor for osteoarthritis and weight reduction can be used to prevent the development of osteoarthritis among overweight people. Moreover, overweight people with osteoarthritis who lose weight experience less joint pain and improved function (Pencharz & MacLean, 2004).

Figure 2.33. Overweight adults with doctor-diagnosed arthritis who reported they received health care provider counseling about weight reduction, by age, gender, insurance, and residence location, 2009



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2009.

Denominator: Civilian noninstitutionalized overweight adults with doctor-diagnosed arthritis.

Note: Estimates are age adjusted to the 2000 U.S. standard population. Rates by age are not age adjusted.

- In 2009, only 42% of overweight adults with doctor-diagnosed arthritis received health care provider counseling about weight reduction (Figure 2.33).
- Overweight adults age 65 and over were less likely to receive weight reduction counseling than adults ages 45-64.
- Overweight men were less likely than overweight women to receive weight reduction counseling.

Also, in the NHDR:

- Overweight Blacks were more likely than Whites and overweight Hispanics were more likely than non-Hispanic Whites to receive weight reduction counseling.
- Overweight adults with basic or complex activity limitations were more likely than adults without such limitations to receive weight reduction counseling.

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Respiratory Diseases

Importance

Mortality

Number of deaths due to chronic lower respiratory diseases
(2010 prelim.) 137,789 (Murphy, et al., 2012)
Number of deaths, influenza and pneumonia combined (2010) 50,003 (Murphy, et al., 2012)
Cause of death rank for chronic lower respiratory diseases (2010) 3rd (Murphy, et al., 2012)
Cause of death rank for influenza and pneumonia combined
(2010 prelim.) 9th (Murphy, et al., 2012)

Prevalence

Adults age 18 and over with current asthma (2011) 18.7 million (Schiller, et al., 2012)
Children under age 18 with current asthma (2010) 7.0 million (Bloom, et al., 2011)

Incidence

Number of discharges attributable to pneumonia (2009) 1.2 million (Wier, et al., 2011)
New cases of tuberculosis (2011) 10,521 (MMWR, 2012a)

Cost

Total cost of upper respiratory infections (annual est.) \$40 billion (Fendrick, et al., 2003)
Total cost of asthma (2007) \$56 billion (Barnett & Nurmagambetov, 2011)
Cost-effectiveness of influenza immunization
(2006) \$0-\$14,000/QALY (Maciosek, et al., 2006)

Measures

The NHQR and NHDR track several quality measures for prevention and treatment of this broad category of illnesses that includes pneumonia, tuberculosis, and asthma. The five measures highlighted in this section are:

- Influenza vaccination.
- Receipt of recommended care for pneumonia.
- Completion of tuberculosis therapy.
- Daily asthma medication.
- Written asthma management plan.

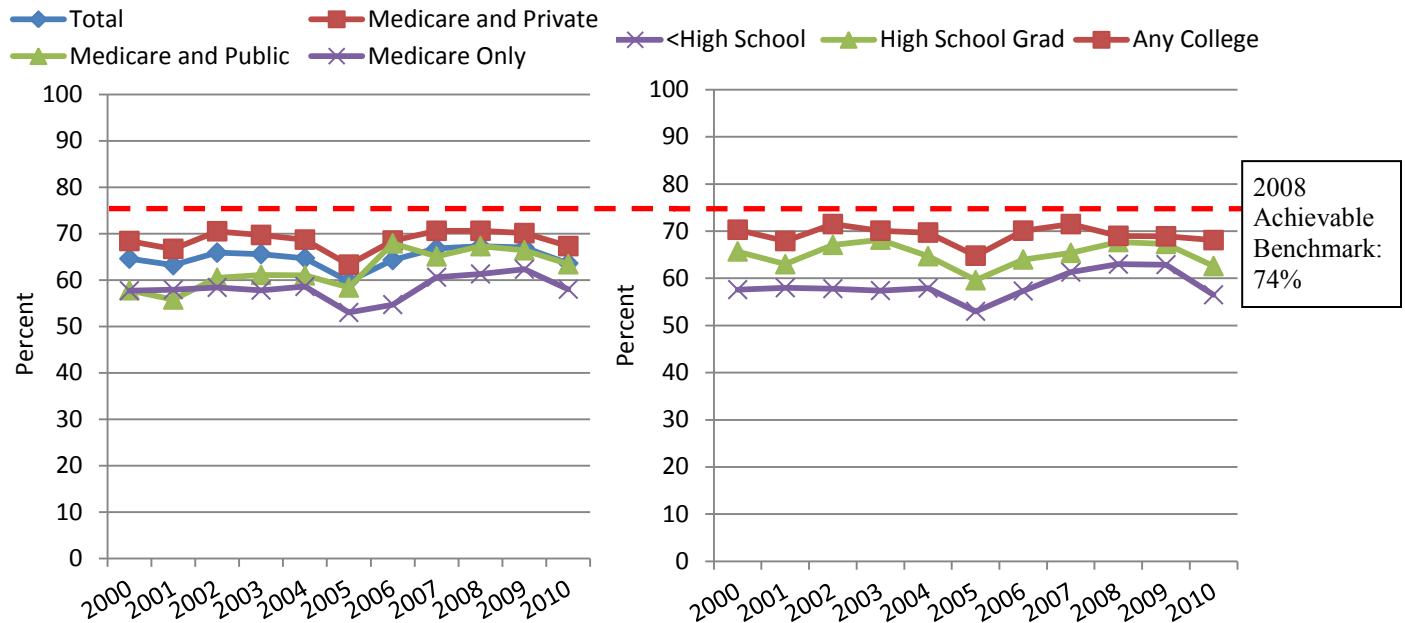
Findings

Prevention: Influenza Vaccination

Vaccination is a cost-effective strategy for reducing illness, death, and disparities associated with pneumonia and influenza.

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Figure 2.34. Adults age 65 and over who reported having influenza vaccination in the past 12 months, by insurance and education, 2000-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2000-2010.

Denominator: Civilian noninstitutionalized population age 65 and over.

Note: Age adjusted to the 2000 U.S. standard population. Benchmark is derived from the Behavioral Risk Factor Surveillance System; see Chapter 1, Introduction and Methods, for details.

- Overall, the percentage of adults age 65 and over who reported having influenza vaccination in the past 12 months did not change between 2000 and 2010 (Figure 2.34).
- Only adults with Medicare and other public insurance showed significant improvement over time.
- In all years, adults with Medicare only were less likely than adults with Medicare and private supplemental health insurance to have influenza vaccination. Until 2006, adults with Medicare and other public insurance were also less likely to have influenza vaccination than adults with Medicare and private supplemental insurance.
- In all years, adults with less than a high school education were less likely than adults with any college education to have influenza vaccination.
- The 2008 top 5 State achievable benchmark was 74%.^{xxv} Only adults with Medicare and other public insurance showed progress toward the benchmark, but they could not achieve it for 11 years.

Also, in the NHDR:

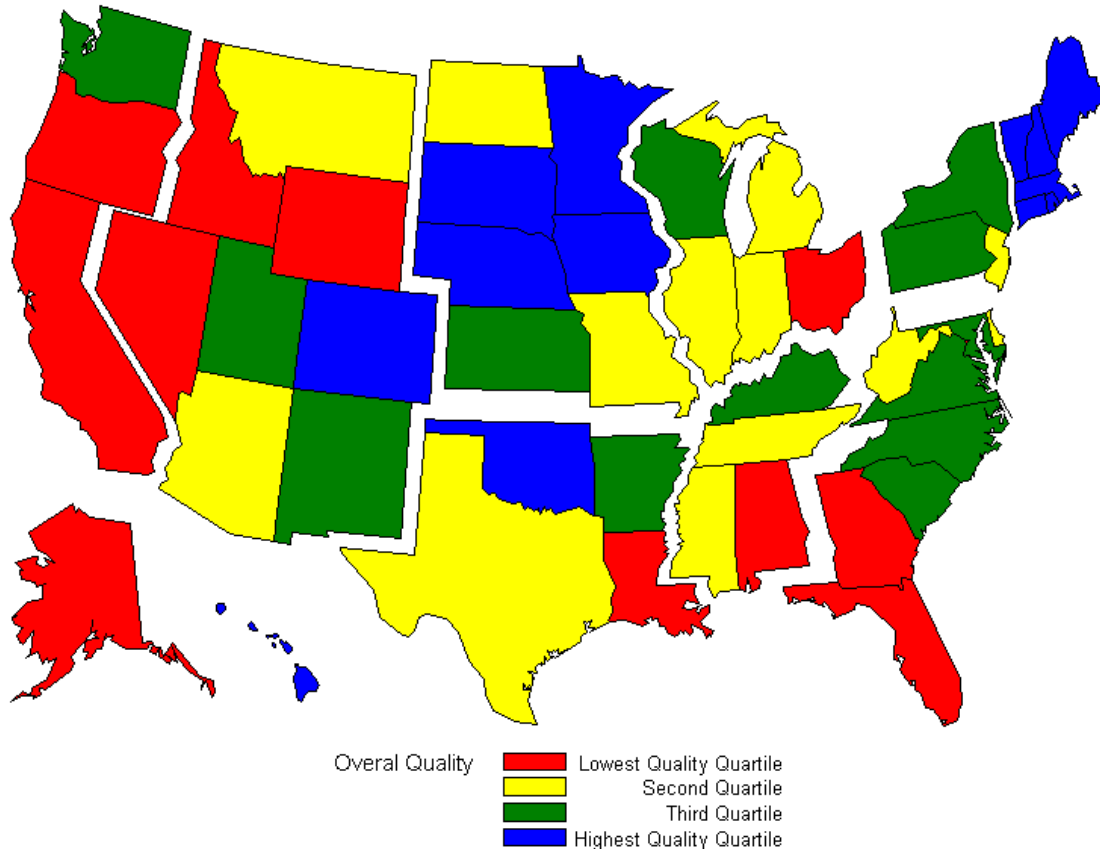
- In all years, Blacks and Hispanics were less likely than non-Hispanic Whites to have influenza vaccination.

^{xxv} The top 5 States that contributed to the achievable benchmark are Colorado, Hawaii, Iowa, Minnesota, and New Hampshire.

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- In all years, poor and low-income adults were less likely than high-income adults to have influenza vaccination.

Figure 2.35. State variation: Adults age 65 and over who reported having influenza vaccination in the past 12 months, 2010



Key: Lowest Quality Quartile identifies States with the lowest rates of influenza vaccination; Highest Quality Quartile identifies States with the highest rates of influenza vaccination.

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2010.

- The States in the lowest quality quartile had influenza vaccination rates under 65.5% while the States in the highest quality quartile had vaccination rates over 70.1%.
- States in the East South Central, West South Central, Mountain, and Pacific census divisions tended to have lower rates of influenza vaccination while States in the New England, Middle Atlantic, and West North Central census divisions tended to have higher rates of influenza vaccination (Figure 2.35).

Also, in the NHDR:

- States in the East North Central, South Atlantic, and East South Central census divisions tended to have larger education-related disparities in influenza vaccination.

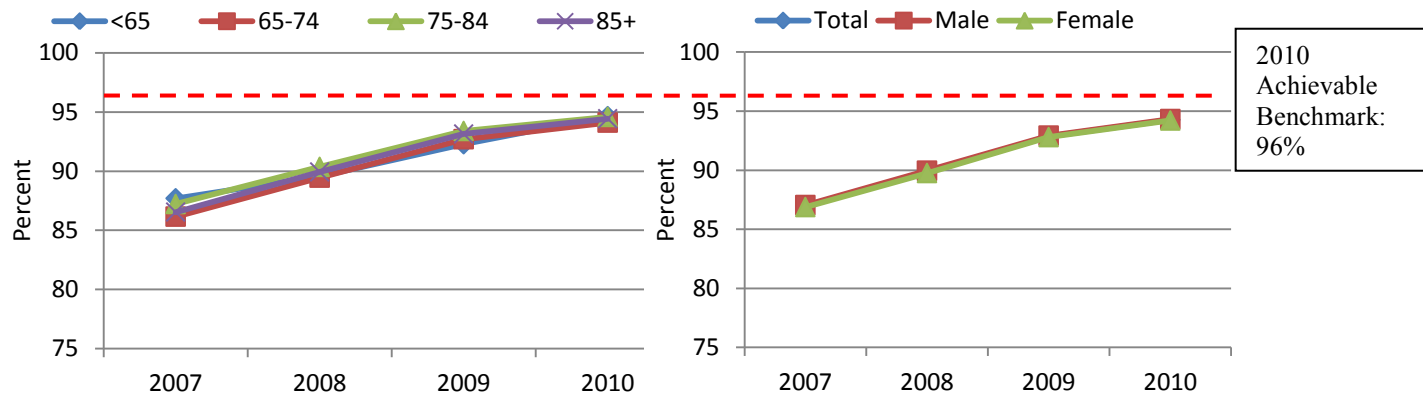
Treatment: Receipt of Recommended Care for Pneumonia

CMS tracks a set of measures for quality of pneumonia care for hospitalized patients. This set of measures was adopted by the Hospital Quality Alliance. Recommended care for patients with

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pneumonia was measured by receipt of (1) initial antibiotics within 6 hours of hospital arrival, (2) antibiotics consistent with current recommendations, (3) blood culture before antibiotics are administered, (4) influenza vaccination status assessment or provision, and (5) pneumococcal vaccination status assessment or provision. An opportunities model composite of these five measures is presented here.

Figure 2.36. Hospital patients with pneumonia who received recommended hospital care, by age and gender, 2007-2010



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2007-2010.

Denominator: Patients hospitalized with a principal discharge diagnosis of pneumonia or a principal discharge diagnosis of either septicemia or respiratory failure and secondary diagnosis of pneumonia.

Note: Recommended care includes initial antibiotics within 6 hours of hospital arrival, antibiotics consistent with current recommendations, blood culture before antibiotics are administered, influenza vaccination status assessment or provision, and pneumococcal vaccination status assessment or provision.

- In 2010, the 2008 top 5 State achievable benchmark of 94% was attained (Figure 2.36). Improvements were observed among all age groups and both genders.
- In 2010, the new top 5 State achievable benchmark was 96%.^{xxvi} All age groups and both genders were within 1 year of the benchmark.

Also, in the NHDR:

- In all years, the percentage of patients with pneumonia who received recommended hospital care was significantly lower for Blacks, Asians, AI/ANs, and Hispanics compared with Whites.

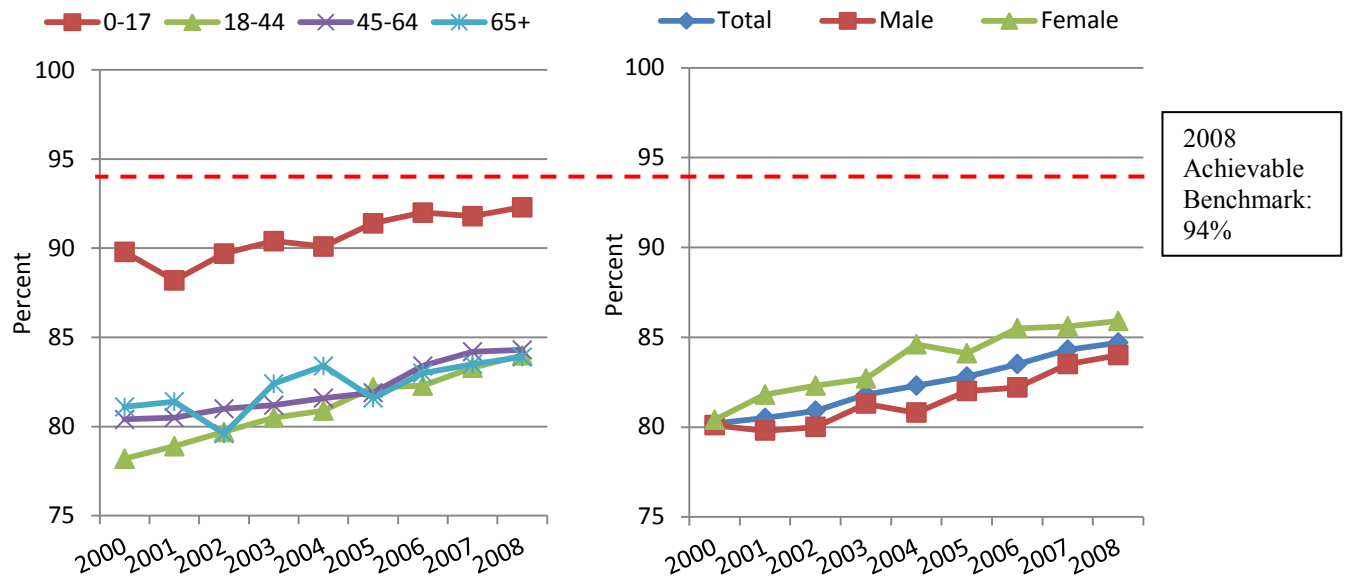
Outcome: Completion of Tuberculosis Therapy

Failure to complete tuberculosis therapy puts patients at increased risk for treatment failure and for spreading the infection to others. Even worse, it may result in the development of drug-resistant strains of tuberculosis.

^{xxvi} The top 5 States that contributed to the achievable benchmark are Florida, Maine, New Hampshire, New Jersey, and Vermont.

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Figure 2.37. Patients with tuberculosis who completed a curative course of treatment within 1 year of initiation of treatment, by age and gender, 2000-2008



Source: Centers for Disease Control and Prevention, National Tuberculosis Surveillance System, 2000-2008.

Denominator: U.S. civilian noninstitutionalized population treated for tuberculosis.

- The percentage of patients who completed tuberculosis therapy within 1 year increased from 80.2% in 2000 to 84.7% in 2008 (Figure 2.37). Improvements were observed among all age and gender categories.
- In all years, children ages 0-17 with tuberculosis were more likely than adults ages 18-44 to complete a curative course of treatment within 1 year of initiation of treatment.
- Since 2004, males have been less likely than females to complete tuberculosis treatment.
- The 2008 top 4 State achievable benchmark was 94%.^{xxvii} At the current annual rate of increase, this benchmark could not be attained overall for about 15 years. Children ages 0-17 could achieve the benchmark in about 3 years while patients age 65 and over would need 25 years. Females could not achieve the benchmark for about 11 years while males would need about 18 years.

Also, in the NHDR:

- In 7 of 9 years, Hispanics were less likely than non-Hispanic Whites to complete tuberculosis treatment.

Management: Daily Asthma Medication

Improving quality of care for people with asthma can reduce the occurrence of asthma attacks and avoidable hospitalizations. The National Asthma Education and Prevention Program, coordinated by the National Heart, Lung, and Blood Institute, develops and disseminates science-based guidelines for asthma diagnosis and management (NHLBI, 2007). These

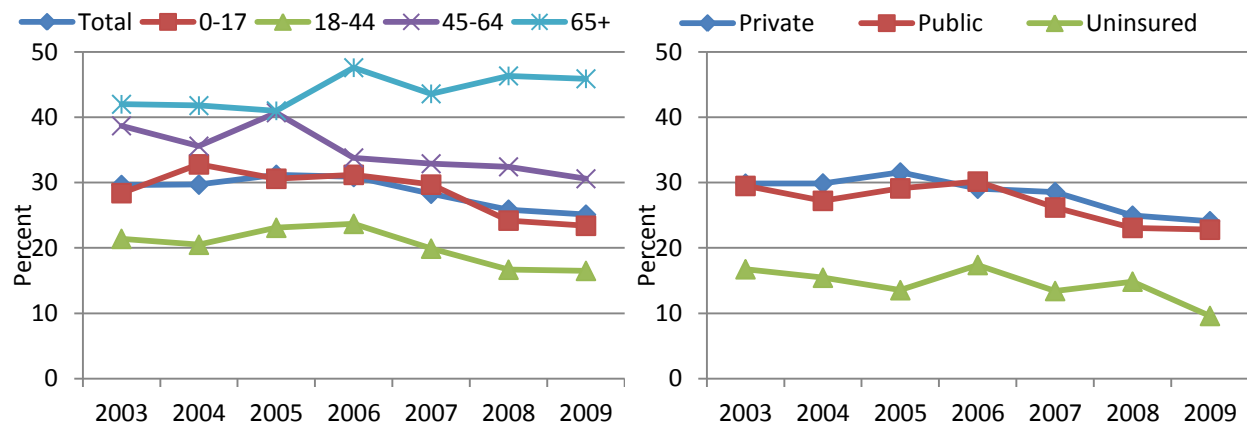
^{xxvii} The top 4 States that contributed to the achievable benchmark are Colorado, Kansas, Mississippi, and Oregon.

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recommendations are built around four essential components of asthma management critical for effective long-term control of asthma: assessment and monitoring, control of factors contributing to symptom exacerbation, pharmacotherapy, and education for partnership in care.

While not all patients with asthma need to take medications, patients with persistent asthma need daily long-term controller medication to prevent exacerbations and chronic symptoms. Preventive medications for people with persistent asthma include inhaled corticosteroids, inhaled long-acting beta-2-agonists, cromolyn, theophylline, and leukotriene modifiers.

Figure 2.38. People with current asthma who reported taking preventive asthma medicine daily or almost daily, by age and insurance, 2003-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2003-2009.

Denominator: Civilian noninstitutionalized population with current asthma.

Note: Age adjusted to the 2000 U.S. standard population. People with current asthma report that they still have asthma or had an asthma attack in the last 12 months. Insurance groups presented are for patients under age 65.

- From 2003 to 2009, the percentage of people with current asthma who reported taking preventive asthma medicine daily or almost daily fell from 29.6% to 25.1% (Figure 2.38). Decreases were observed among all age and insurance groups except people age 65 and over, who experienced an increase.
- In all years, people ages 18-44 were less likely than other age groups to take daily preventive asthma medicine.
- In all years, uninsured people under age 65 were less likely than people under age 65 with any private health insurance to take daily preventive asthma medicine.

Also, in the NHDR:

- In 4 of 7 years, Blacks were less likely to take daily preventive asthma medicine than non-Hispanic Whites, and poor and low-income people were less likely to take daily preventive asthma medicine than high-income people.

New

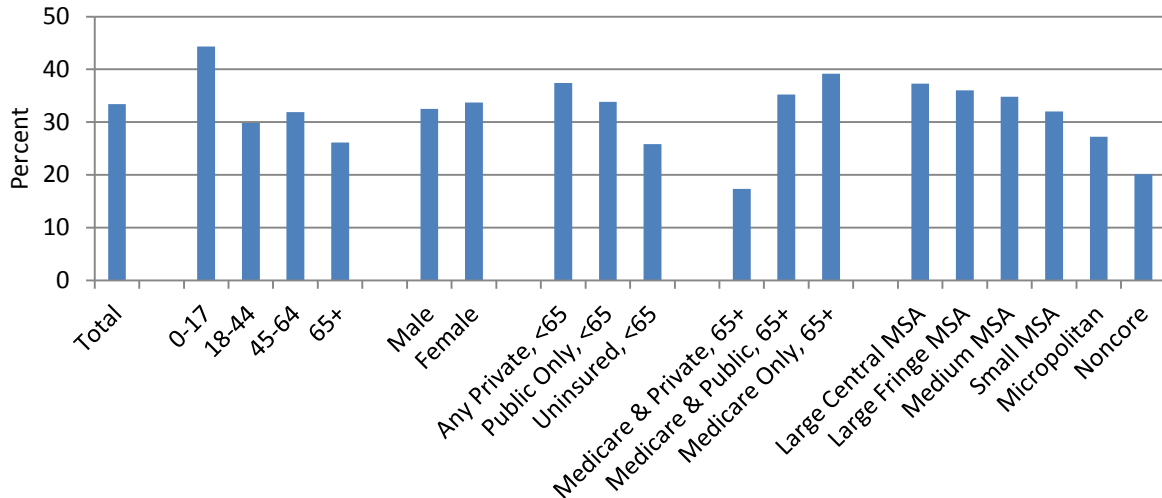
Management: Written Asthma Management Plan

A successful partnership for asthma care requires providers to educate patients about daily management and how to recognize and handle worsening asthma. Hence, providers should develop a written asthma management plan as part of educating patients regarding self-

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management, especially for patients with moderate or severe persistent asthma and those with a history of severe exacerbation.

Figure 2.39. People with current asthma who received a written asthma management plan from their health provider, by age, gender, insurance, and residence location, 2008



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2008.

Denominator: Civilian noninstitutionalized population with current asthma.

Note: Estimates are age adjusted to the 2000 U.S. standard population. Rates by age are not age adjusted.

- In 2008, only one-third of people with current asthma received a written asthma management plan from their provider (Figure 2.39).
- Children ages 0-17 were more likely to receive a written asthma management plan than adults ages 18-44.
- Among people under age 65, those who were uninsured were less likely to receive a written asthma management plan than those who had private health insurance.
- Among people age 65 and over, those who had Medicare and private insurance were less likely to receive a written asthma management plan than those who had Medicare and other public insurance or Medicare only.
- Residents of micropolitan and noncore areas were less likely to receive a written asthma management plan than residents of large fringe metropolitan areas (suburbs).

Also, in the NHDR:

- Blacks were more likely than Whites to receive an asthma management plan.
- People with any college education were more likely than people with less than a high school education to receive a written asthma management plan.

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Lifestyle Modification

Importance

Mortality

Number of deaths per year attributable to smoking (2000-2004)..... 443,000 (MMWR, 2011b)

Prevalence

Number of adult current cigarette smokers (2010)45.3 million (MMWR, 2011b)
Number of obese adults (2009-2010) 78 million (Ogden, et al., 2012)
Number of obese children (2009-2010) 12.5 million (Ogden, et al., 2012)
Percentage of adults with no leisure-time physical activity (2005) 40% (Barnes, 2010)
Percentage of adults who are obese (2009-2010) 35.7% (Fryar, et al., 2012b)
Percentage of children who are obese (2009-2010) 16.9% (Fryar, et al., 2012a)

Cost

Total cost of smoking (2000-2004 est.)\$193 billion (MMWR, 20011b)
Total health care cost related to obesity (2008 est.).....\$147 billion (MMWR, 2010b)

Measures

Unhealthy behaviors place many Americans at risk for a variety of diseases. Lifestyle practices account for more than 40% of the differences in health among individuals (Satcher & Higginbotham, 2008). A recent study examined the effects on incidence of coronary heart disease (CHD), stroke, diabetes, and cancer of four healthy lifestyles:

- Never smoking,
- Not being obese,
- Engaging in at least 3.5 hours of physical activity per week, and
- Eating a healthy diet (higher consumption of fruits, vegetables, and whole grain bread and lower consumption of red meat).

Engaging in one healthy lifestyle compared with none cut the risk of developing these diseases in half while engaging in all four cut risk by 78%. Unfortunately, healthy lifestyle practices have declined over the past two decades (Ford, et al., 2009).

Helping patients choose and maintain healthy lifestyles is a critical role of health care professionals. This year, the Lifestyle Modification section includes measures for both adults and children. Whenever children are mentioned in the section, the report is actually referencing the parents or guardians who were interviewed on behalf of the children.

The NHQR tracks several quality measures for modifying unhealthy lifestyles, including the following eight core report measures:

- Counseling smokers to quit smoking.
- Obese adults told by a doctor that they were overweight.
- Obese children and teens told by a doctor that they were obese.

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- Counseling obese adults about exercise.
- Obese adults who do not exercise.
- Counseling for children about physical activity.
- Counseling obese adults about healthy eating.
- Counseling for children about healthy eating.

Findings

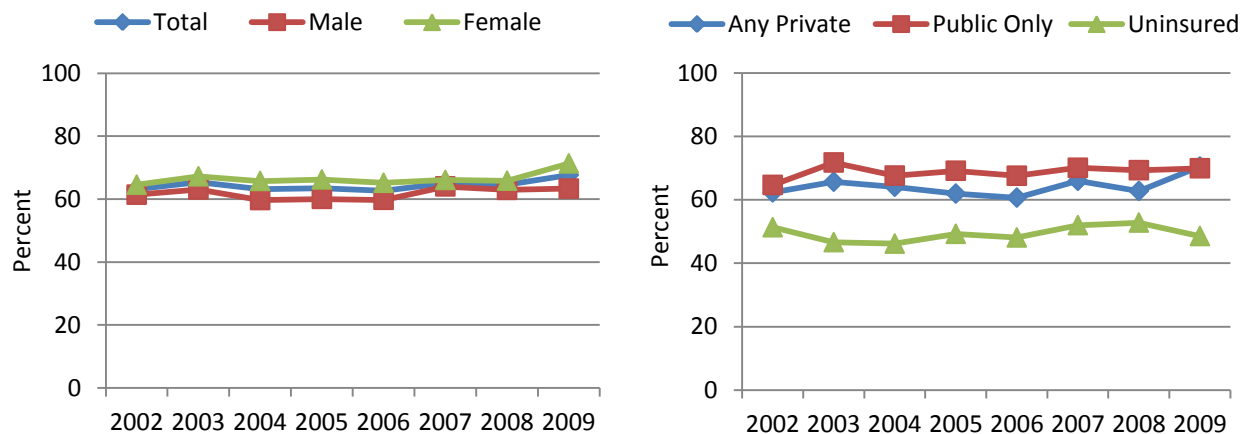
Prevention: Counseling Smokers To Quit Smoking

Smoking harms nearly every organ of the body and causes or exacerbates many diseases. Smoking causes more than 80% of deaths from lung cancer and more than 90% of deaths from chronic obstructive pulmonary disease (MMWR, 2008). Cigarette smoking increases the risk of dying from CHD two- to threefold (MMWR, 2008).

Quitting smoking has immediate and long-term health benefits. The risk of a heart attack and death from CHD is reduced by 50% in the first year after smoking cessation. The risk of mortality declines most rapidly in the first 3 years after smoking cessation, taking about 3 to 5 years of abstaining from smoking for cardiovascular risk to disappear (OSH, 2010).

Smoking is a modifiable risk factor, and health care providers can help encourage patients to change their behavior and quit smoking. The 2008 update of the Public Health Service Clinical Practice Guideline *Treating Tobacco Use and Dependence* concludes that counseling and medication are both effective tools alone, but the combination of the two methods is more effective in increasing smoking cessation.^{xxviii}

Figure 2.40. Adult current smokers with a checkup in the last 12 months who received advice to quit smoking, by gender and insurance, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized adult current smokers who had a checkup in the last 12 months.

Note: Estimates are age adjusted to the 2000 U.S. standard population using three age groups: 18-44, 45-64, and 65 and over.

^{xxviii} More information about the 2008 Public Health Service Clinical Practice Guideline *Treating Tobacco Use and Dependence* can be found at www.ahrq.gov/clinic/tobacco/treating_tobacco_use08.pdf.

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- Overall, in 2009, 67.6% of adult current smokers received advice to quit smoking (Figure 2.40).
- From 2002 to 2009, there were no statistically significant changes by gender or insurance in the percentage of adult current smokers who were advised to quit smoking.
- From 2002 to 2009, there were no statistically significant differences between male and female adult current smokers in the percentage who were advised to quit smoking.
- In all years, adult current smokers with private insurance were more likely than those without insurance to receive advice to quit smoking.

Also, in the NHDR:

- In 6 of 8 years, non-Hispanic White adult current smokers were more likely to receive advice to quit smoking than Hispanic adult current smokers.
- From 2002 to 2009, the percentage of adults with any college education who were advised to quit smoking increased.

Prevention: Counseling About Exercise

Approximately one-third of adults are obese and about 17% of children and adolescents ages 2-19 are obese (CDC, 2011d). A larger proportion of individuals are overweight or obese among lower educated groups, Blacks, and Mexican Americans than among other racial, ethnic, and socioeconomic groups. Although women have lower body mass indexes than men, they gain weight faster, putting them at risk of disease (Truong & Sturm, 2005). Obesity increases the risk for many chronic, often deadly conditions, such as hypertension, cancer, diabetes, and CHD.

Physician-based exercise and diet counseling is an important component of effective weight loss interventions. Such interventions have been shown to increase levels of physical activity among sedentary patients, resulting in a sustained favorable body weight and body composition (Lin, et al., 2010). Although every obese person may not need counseling about exercise and diet, many would likely benefit from improvements in these activities.

Regular exercise and a healthy diet aid in maintaining normal blood cholesterol levels, weight, and blood pressure, reducing the risk of heart disease, stroke, diabetes, and other comorbidities of obesity. Populations at risk for overweight and obesity may not receive adequate advice about lifestyle changes for many reasons. For instance, access to information, including physician knowledge of the latest recommendations, may be limited. The 2008 Physical Activity Guidelines for Americans recommend that adults engage in 2 hours and 30 minutes a week of moderate-intensity physical activity or 1 hour and 15 minutes a week of vigorous-intensity aerobic physical activity.^{xxix}

In addition to physician-based exercise and diet counseling, many national endeavors encourage lifestyle modification. For example, the President's Challenge is a program of the President's Council on Fitness, Sports, and Nutrition that promotes an active and fit lifestyle through a suite of recognition programs available to anyone age 6 and over. The Coordinated Approach to Child

^{xxix} More information about the 2008 Physical Activity Guidelines for Americans is available at www.health.gov/paguidelines/guidelines/default.aspx.

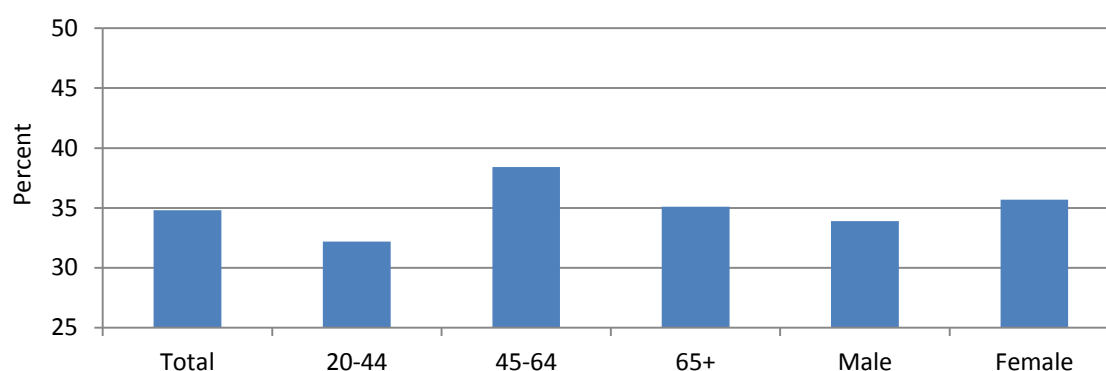
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Health (CATCH) is a successful evidence-based program that promotes physical activity and healthy food choices, which has been implemented in many schools and afterschool organizations nationwide and in Canada, benefiting many children.^{xxx}

Prevention: Obese Adults Told by a Doctor That They Were Overweight

Although physician guidelines recommend that health care providers screen all adult patients for obesity (USPSTF, 2003), obesity remains underdiagnosed among U.S. adults (Diaz, et al., 2004). Physicians have direct access to many high-risk individuals, increasing the opportunity to educate patients about their personal risks, as well as suggesting realistic and sustainable lifestyle changes that can lead to a healthier weight and more active life.

Figure 2.41. Adults with obesity age 20 and over who reported being told by a doctor that they were overweight, by age and gender, 2007-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2007-2010.

Denominator: People age 20 and over with a body mass index of 30 or greater.

Note: Estimates are age adjusted to the 2000 U.S. standard population. Total and gender are adjusted using three age groups: 20-44, 45-64, and 65 and over.

- In 2007-2010, 34.8% of obese adults age 20 and over reported being told by a doctor that they were overweight (Figure 2.41).
- In 2007-2010, obese adults ages 20-44 (32.2%) were less likely to report being told by a doctor that they were overweight compared with those ages 45-64 (38.4%).
- In 2007-2010, there were no statistically significant gender differences among obese adults who were told by a doctor that they were overweight.

Also, in the NHDR:

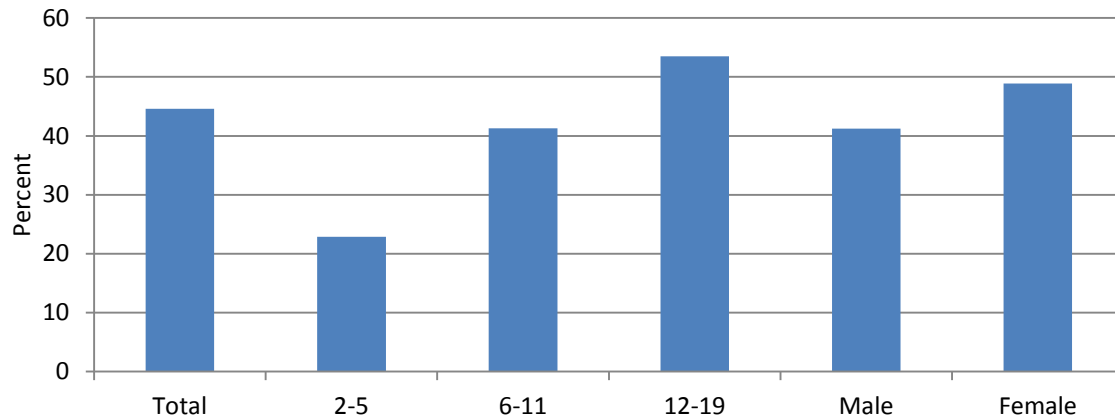
- In 2007-2010, non-Hispanic White adults with obesity were less likely to report being told by a doctor that they were overweight compared with obese Mexican American and non-Hispanic Black adults.
- In 2007-2010, obese adults with less than a high school education were more likely than obese adults with any college education to report being told by a doctor that they were overweight.

^{xxx} More information about Coordinated Approach to Child Health (CATCH) is available at <http://catchusa.org/>.

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Prevention: Obese Children and Teens Told by a Doctor That They Were Obese

Figure 2.42. Obese children and teens ages 2-19 who were told by a doctor or health professional that they were obese, by age and gender, 2007-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 2007-2010.

Denominator: U.S. civilian noninstitutionalized population ages 2-19 who were obese.

Note: Obese children are identified using age- and sex-specific reference data from the 2000 Centers for Disease Control and Prevention body mass index (BMI) for age growth charts. Children with BMI values at or above the 95th percentile of the sex-specific BMI growth charts are categorized as obese.

- In 2007-2010, 44.6% of obese children and teens ages 2-19 reported being told by a doctor that they were obese (Figure 2.42).
- In 2007-2010, obese children ages 2-5 (22.9%) were less likely than those ages 6-11 (41.3%) and 12-19 (53.5%) to report being told by a doctor that they were obese.
- In 2007-2010, obese female children (48.9%) were more likely than obese male children (41.2%) to report being told by a doctor that they were obese.

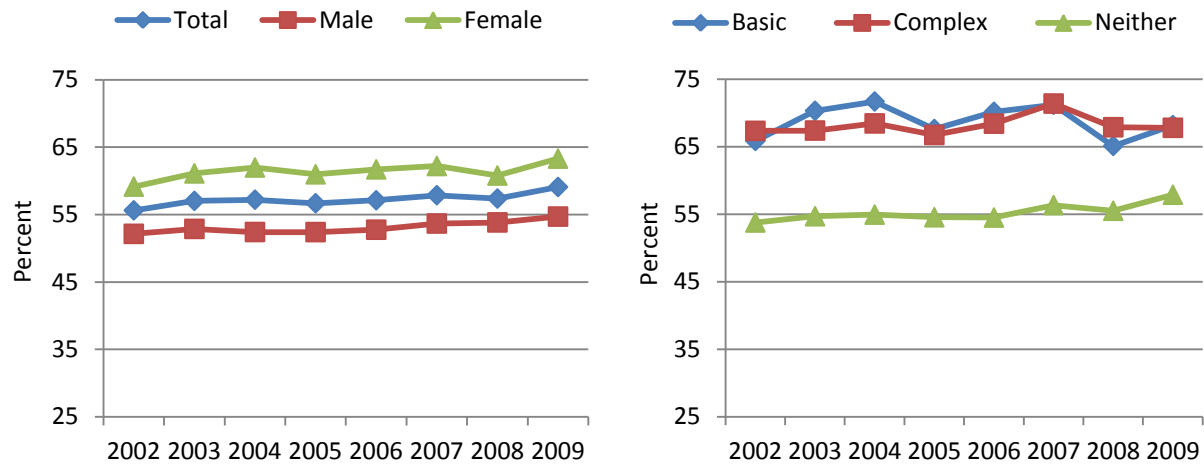
Also, in the NHDR:

- In 2007-2010, non-Hispanic White children who were obese were less likely than their Black counterparts to report being told that they were obese.
- In 2007-2010, obese children from low-income households were more likely to report being told that they were obese compared with those from high-income households.

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Prevention: Counseling Obese Adults About Exercise

Figure 2.43. Adults with obesity who ever received advice from a health provider to exercise more, by gender and activity limitation, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized adults age 18 and over with obesity.

Note: Obesity is defined as a body mass index of 30 or higher. Basic activity limitations refer to problems with mobility, self-care, domestic life, and activities that depend on sensory functioning, and complex activity limitations refer to limitations experienced in work and in community, social, and civic life. Neither indicates people with neither basic nor complex activity limitations.

- Overall, in 2009, 59.1% of adults with obesity reported ever receiving advice from a health provider to exercise more (Figure 2.43).
- From 2002 to 2009, there were no statistically significant changes in any gender or activity limitation group in the percentage of adults with obesity who were advised to exercise.
- In all years, obese female adults were more likely to receive advice to exercise than obese male adults.
- From 2002 to 2009, obese adults with neither basic nor complex activity limitations were less likely to receive advice to exercise compared with those with basic or complex activity limitations.

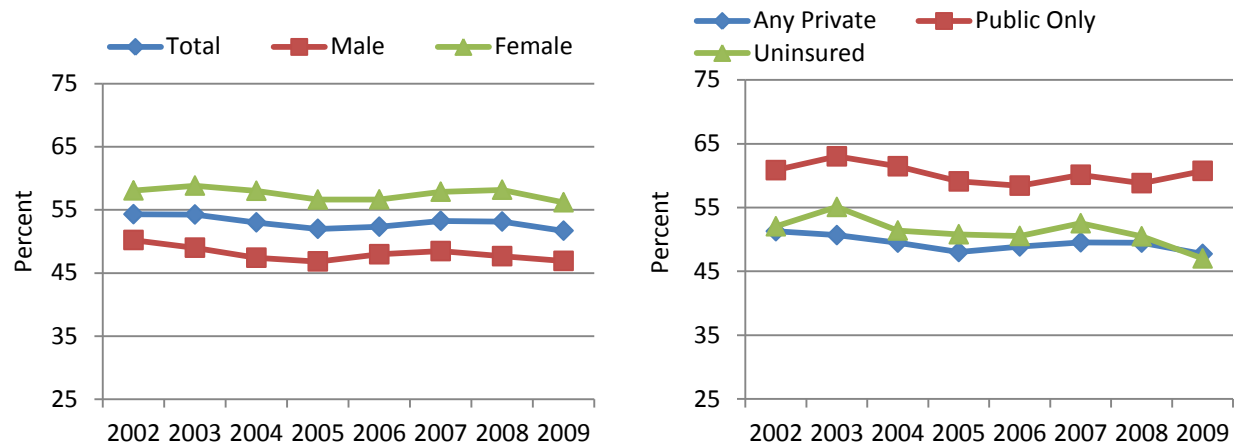
Also, in the NHDR:

- From 2002 to 2009, there were no statistically significant changes by race/ethnicity in the percentage of obese adults who received advice to exercise, except for an increase in the percentage of obese Hispanic adults receiving advice.
- From 2002 to 2009, the percentage of obese adults who received advice from a health provider to exercise increased for poor and low-income groups.

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Outcome: Obese Adults Who Do Not Exercise

Figure 2.44. Adults with obesity who did not spend half an hour or more in moderate or vigorous physical activity at least three times a week, by gender and insurance, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population age 18 and over.

Note: Obesity is defined as a body mass index of 30 or higher.

- Overall, in 2009, 51.7% of adults with obesity did not spend half an hour or more engaged in moderate or vigorous physical activity at least three times a week (Figure 2.44).
- From 2002 to 2009, there were no statistically significant changes in any gender or insurance group in the percentage of adults with obesity who did not engage in half an hour or more of moderate or vigorous physical activity at least three times a week.
- In all years, obese female adults were less likely to engage in half an hour or more of moderate or vigorous physical activity at least three times a week compared with obese male adults.
- From 2002 to 2009, obese adults with public insurance were less likely to engage in half an hour or more of moderate or vigorous physical activity at least three times a week compared with those with private insurance.

Also, in the NHDR:

- From 2002 to 2009, there were no statistically significant changes by race/ethnicity in the percentage of adults with obesity who did not spend half an hour or more engaged in moderate or vigorous physical activity, except for a decrease among obese non-Hispanic Black adults.
- From 2002 to 2009, obese adults with less than a high school education were less likely to spend half an hour or more engaged in moderate or vigorous physical activity compared with obese adults with any college education.

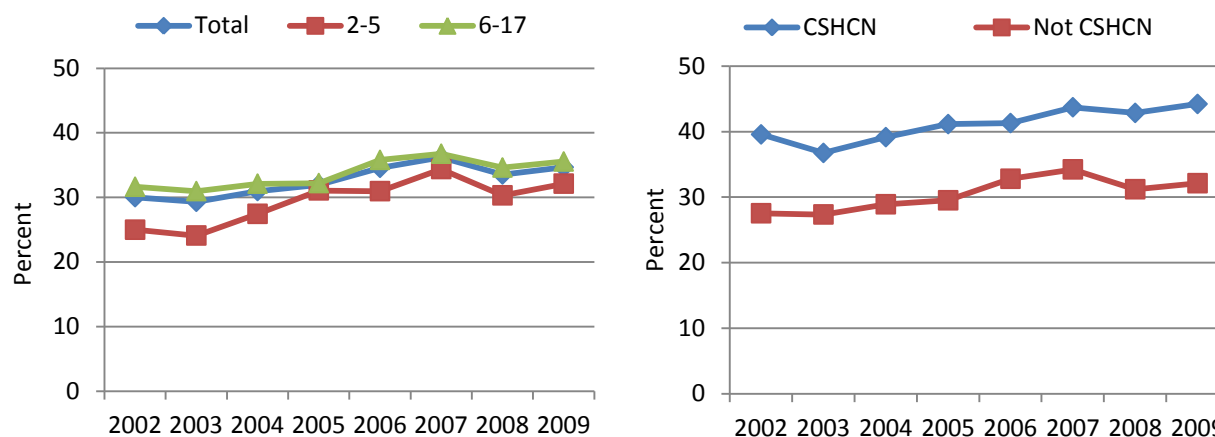
Prevention: Counseling for Children About Physical Activity

Childhood is often a time when people establish healthy lifelong habits. Physicians can play an important role in encouraging healthy behaviors from a young age. For example, they can educate children and parents about the importance of regular exercise and healthy eating.

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Overweight and obese children often become overweight and obese adults, with numerous and costly consequences. Unfortunately, the incidence of overweight and obesity has tripled since 1980. Children have become more sedentary in the last two decades, necessitating weight management through increased physical activity. In 2007-2008, 20% of children ages 6-11 years and 18% of people ages 12-19 were obese (MMWR, 2011a). The 2008 Physical Activity Guidelines for Americans recommend that children and adolescents engage in 1 hour or more of physical activity everyday.^{xxx}

Figure 2.45. Children ages 2-17 for whom a health provider gave advice within the past 2 years about exercise, by age and special health care needs, 2002-2009



Key: CSHCN = children with special health care needs. See Medical Expenditure Panel Survey documentation for the 2008 Full Year Consolidated Data File at www.meps.ahrq.gov/mepsweb/data_stats/download_data_files_detail.jsp?cboPufNumber=HC-121 for details.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: U.S. civilian noninstitutionalized population ages 2-17.

Note: Exercise advice includes the amount and kind of sports or physically active hobbies children should engage in.

- Overall, in 2009, 34.7% of parents or guardians reported receiving advice within the past 2 years about the amount and kind of sports or physically active hobbies their children should engage in (Figure 2.45).
- From 2002 to 2009, the percentage of children given advice about exercise improved for those ages 2-5 (from 25% to 32.1%) and those ages 6-17 (from 31.6% to 35.5%).
- In the same period, increases in the percentage who were given advice about exercise were observed for children with special health care needs (from 39.6% to 44.2%) and those without such needs (from 27.5% to 32.1%).
- In all years, children ages 6-17 were more likely to receive advice to exercise compared with those ages 2-5.
- From 2002 to 2009, children with special health care needs were more likely to receive advice to exercise than those without such needs.

^{xxx} For more information about the 2008 Physical Activity Guidelines for Americans, go to www.health.gov/paguidelines/guidelines/default.aspx.

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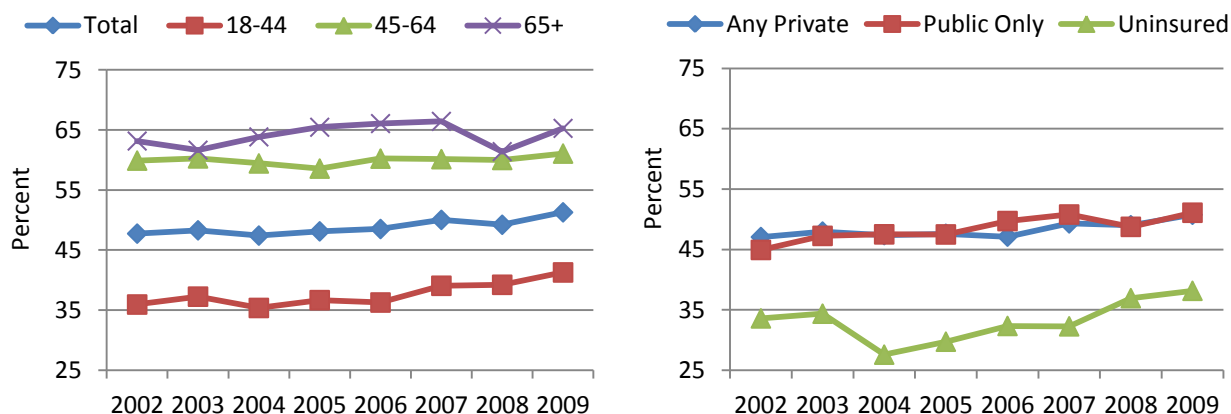
Also, in the NHDR:

- From 2002 to 2009, the percentage of children who were given advice about exercise improved for non-Hispanic White children and for Hispanic children.
- From 2002 to 2009, the percentage of children who were given advice about exercise improved for all income groups, although children from high-income households were more likely to receive advice to exercise compared with those from poor, low-income, and middle-income households.

Prevention: Counseling Obese Adults About Healthy Eating

In addition to increased physical activity, an important factor in maintaining a healthy body weight is modifying eating habits to include a diet that incorporates nutritional food and beverages. It is essential for physicians to emphasize to patients the importance of consuming foods from all food groups, including whole grains and fibers, lean proteins, complex carbohydrates, fruits, and vegetables, as well as providing education about balancing energy intake and energy expenditure. The U.S. Department of Agriculture created the Dietary Guidelines for Americans 2010 to aid people in understanding the complexity of healthy eating for both children and adults.^{xxxii}

Figure 2.46. Adults with obesity who ever received advice from a health provider about eating fewer high-fat or high-cholesterol foods, by age and insurance, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population age 18 and over.

Note: Obesity is defined as a body mass index of 30 or higher.

- Overall, in 2009, 51.3% of adults with obesity received advice from a health provider about healthy eating (Figure 2.46).
- From 2002 to 2009, the percentage of adults with obesity who received advice about healthy eating increased among adults ages 18-44 (from 35.9% to 41.3%) and among those with public insurance (from 44.9% to 51.1%).
- In all years, adults with obesity ages 18-44 were less likely to receive advice about healthy eating compared with other age groups.

^{xxxii} For more information about the Dietary Guidelines for Americans, go to www.dietaryguidelines.gov.

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- From 2002 to 2009, adults without insurance were less likely to receive advice about healthy eating compared with those with private insurance.

Also, in the NHDR:

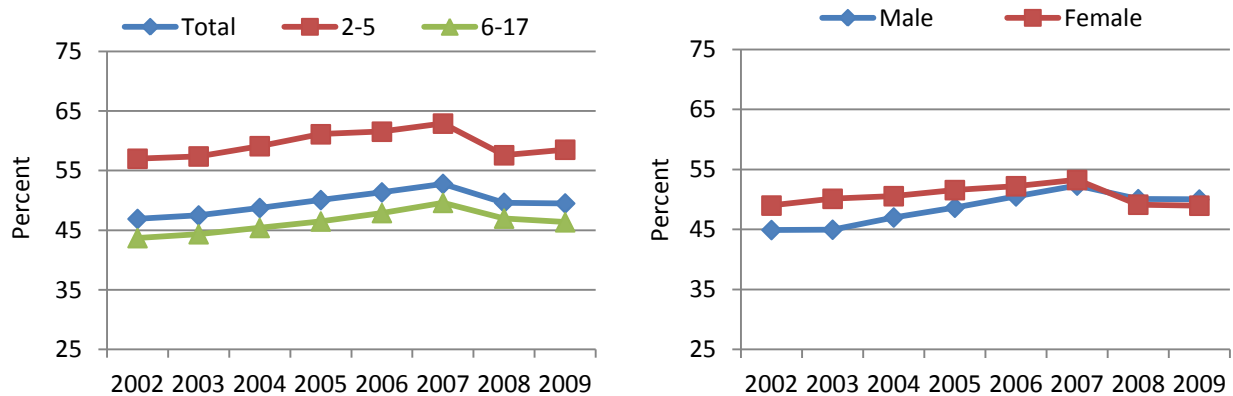
- From 2002 to 2009, the percentage of obese Hispanic adults who received advice about healthy eating increased, but there were no statistically significant changes for other racial/ethnic groups.
- From 2002 to 2009, the percentage of obese adults with less than a high school education who were advised about healthy eating increased.

Prevention: Counseling for Children About Healthy Eating

An increasing number of children consume diets with too many calories and little nutritional value. Growing evidence has shown the integral role nutrition plays throughout one's lifetime. Eating patterns that are established early in childhood are often adopted later in life, making early interventions important.

The Dietary Guidelines for Americans encourage children and adolescents to maintain a calorie-balanced diet to support normal growth and development without gaining excess weight. The American Academy of Pediatrics recommends that pediatricians discuss and promote healthy diets with all children and their parents or guardians, for those who are overweight and those who are not (Krebs & Jacobson, 2003).

Figure 2.47. Children ages 2-17 for whom a health provider ever gave advice about healthy eating, by age and gender, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: U.S. civilian noninstitutionalized population ages 2-17.

- Overall, in 2009, only about half of parents or guardians reported receiving advice within the past 2 years about their children eating a healthy diet (Figure 2.47).
- From 2002 to 2009, the percentage of children ages 6-17 who were advised about healthy eating increased (from 43.7% to 46.4%), as did the percentage of males (from 44.9% to 50%).
- In all years, children ages 2-5 were more likely to receive advice about healthy eating than those ages 6-17.

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- From 2002 to 2009, there were no statistically significant gender differences among children who received advice about healthy eating.

Also, in the NHDR:

- From 2002 to 2009, statistically significant improvements in the percentage of children who were given advice about healthy eating were observed only for Hispanic children.
- From 2002 to 2009, the percentage of children given advice about healthy eating increased for children from poor and low-income households.

Functional Status Preservation and Rehabilitation

Importance

Demographics

Noninstitutionalized adults needing help of another person with activities of daily living (ADLs) ^{xxxiii} (2011)	5.2 million (Adams, et al., 2012)
Noninstitutionalized adults needing help with instrumental activities of daily living (IADLs) ^{xxxiv} (2011)	9.8 million (Adams, et al., 2012)
Number of Medicare beneficiaries receiving inpatient rehabilitation facility care (2010)	359,000 (MedPAC, 2012)

Costs

Medicare payments for outpatient physical therapy (2006 est.)	\$3.1 billion (Ciolek & Hwang, 2008)
Medicare payments for outpatient occupational therapy (2006 est.)	\$747 million (Ciolek & Hwang, 2008)
Medicare payments for outpatient speech-language pathology services (2006 est.)	\$270 million (Ciolek & Hwang, 2008)
Medicare payments for hospital outpatient rehabilitation (2011)	\$4.6 billion (CMS, 2012a)
Medicare payments for inpatient rehabilitation facility care (2011) .	\$6.7 billion (MedPAC, 2012)

Measures

A person's ability to function can decline with disease or age, but it is not always an inevitable consequence. Threats to function span a wide variety of medical conditions. Services to maximize function are delivered in a variety of settings, including providers' offices, patients' homes, long-term care facilities, and hospitals.

Some health care interventions can help prevent diseases that commonly cause declines in functional status. Other interventions, such as physical activity, physical therapy, occupational therapy, and speech-language pathology services, can help patients regain function that has been lost or minimize the rate of decline in functioning.

The NHQR and NHDR track several measures related to functional status preservation and rehabilitation. Two measures are highlighted in this section:

- Improvement in mobility among home health care patients.
- Nursing home residents needing more help with daily activities.

In addition, this year we have a special focus section on functional improvement of inpatient rehabilitation facility (IRF) patients for all diagnoses.

^{xxxiii} ADLs consist of basic self-care tasks, such as bathing, dressing, eating, transferring, using the toilet, and walking.

^{xxxiv} IADLs consist of tasks needed for a person to live independently, such as shopping, doing housework, preparing meals, taking medications, using the telephone, and managing money.

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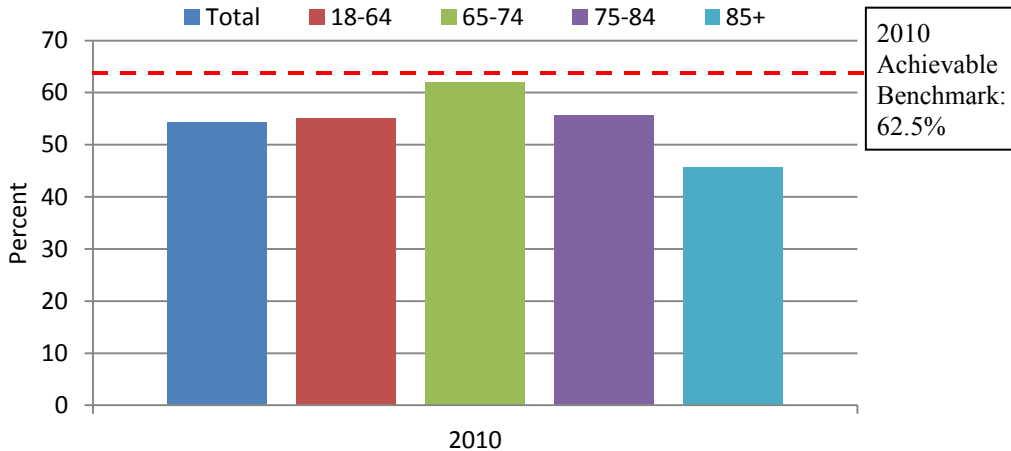
Findings

Outcome: Improvement in Mobility Among Home Health Care Patients

After an illness or injury, many patients receiving home health care may need temporary help to walk safely. This assistance can come from another person or from equipment, such as a cane. Patients who use a wheelchair may have difficulty moving around safely, but if they can perform this activity with little assistance, they are more independent, self-confident, and active.

As patients recover from illness or injury, physical therapy can facilitate improvements in walking and moving with a wheelchair. However, in cases of patients with some neurologic conditions, such as progressive multiple sclerosis or Parkinson's disease, ambulation may not improve even when the home health agency provides good care. In addition, the characteristics of patients referred to home health agencies vary across States.

Figure 2.48. Adult home health care patients whose ability to walk or move around improved, by age, 2010



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2010.

Denominator: Adult nonmaternity patients completing an episode of skilled home health care and not already performing at the highest level at the start of the episode, according to the OASIS question on ambulation.

Note: Starting January 1, 2010, the patient assessment instrument for home health agencies was changed to OASIS-C and ambulation improvement is measured differently than with the previous version of the assessment instrument. Therefore, we are presenting only 2010 data.

- In 2010, the percentage of home health care patients who got better at walking or moving around was 54.4% (Figure 2.48).
- Patients age 85 and over were less likely than patients in other age groups to show improvement. These patients may have higher levels of disability or infirmity than younger patients that make improvements in mobility harder to achieve.
- The 2010 top 5 State achievable benchmark was 62.5%.^{xxxv} Data are insufficient to determine time to benchmark.

^{xxxv} The top 5 States that contributed to the achievable benchmark are Maine, Missouri, New Jersey, South Carolina, and Utah.

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Also, in the NHDR:

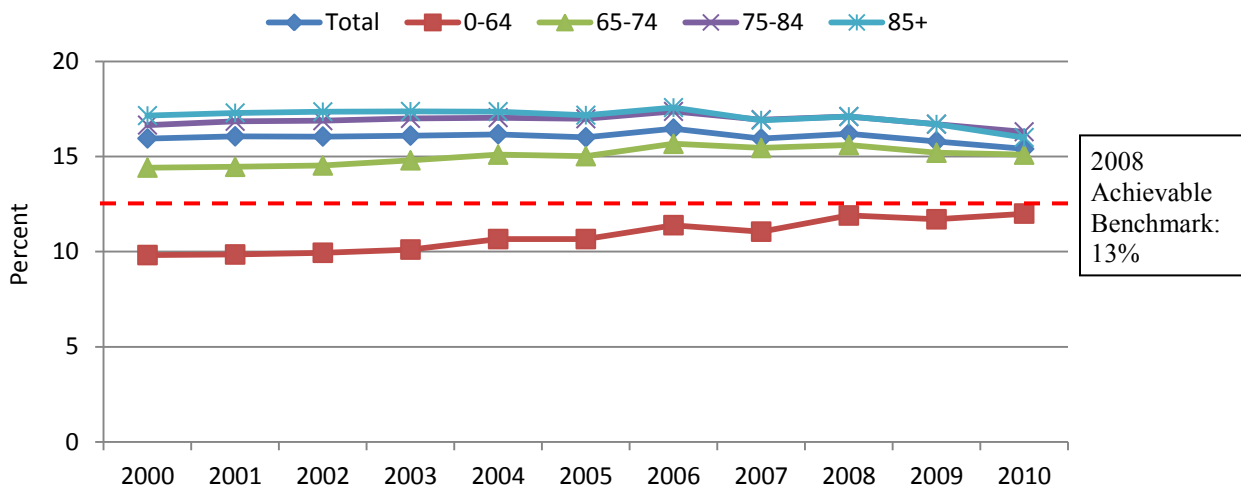
- Hispanic home health patients were less likely than non-Hispanic Whites to show improvement in their ability to walk or move around.

Outcome: Nursing Home Residents Needing More Help With Daily Activities

Long-stay residents typically enter a nursing facility because they can no longer care for themselves at home. They tend to remain in the facility for several months or years. While almost all long-stay nursing home residents have limitations in their ADLs, nursing home staff help residents stay as independent as possible.^{xxxvi}

Most residents want to care for themselves, and the ability to perform daily activities is important to their quality of life. Some functional decline among residents cannot be avoided, but optimal nursing home care seeks to minimize the rate of decline. This measure uses assessments of need for help with daily activities, conducted regularly by nursing homes, to identify those residents whose need for help increased from one assessment to the next.

Figure 2.49. Long-stay nursing home residents whose need for help with daily activities increased, by age, 2000-2010



Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2010. Data are from the third quarter of each calendar year.

Denominator: All long-stay residents in Medicare- or Medicaid-certified nursing home facilities.

Note: For this measure, lower rates are better.

^{xxxvi} In *Olmstead v. L.C.*, 527 U.S. 581 (1999), the U.S. Supreme Court concluded that the unjustified institutionalization of people with disabilities is a form of unlawful discrimination under the Americans With Disabilities Act of 1990, 42 U.S.C. 12101 *et seq.* The Court held that States are required to provide community-based services for people with disabilities who would otherwise be entitled to institutional services when: (1) such placement is appropriate; (2) the affected person does not oppose such treatment; and (3) the placement can be reasonably accommodated, taking into account the resources available to the State and the needs of other individuals with disabilities. More information about HHS Office for Civil Rights' Olmstead enforcement efforts is available at www.hhs.gov/ocr/civilrights/understanding/disability/serviceolmstead/index.html.

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- In 2010, 15.4% of long-stay nursing home residents had increased need for help with daily activities (Figure 2.49). Between 2000 and 2010, the rate increased among residents ages 0-64.
- In all years, residents ages 0-64 were less likely than residents ages 65-74 to need increased help with daily activities. Before 2007, residents ages 75-84 and 85 and over were more likely than residents ages 65-74 to need increased help with daily activities.
- The 2008 top 5 State achievable benchmark was 13%.^{xxxvii} In 2010, residents ages 0-64 had a rate lower than the benchmark, but their rates were increasing over time. There is no evidence of progress toward the benchmark by any other age group.

Also, in the NHDR:

- In all years, API residents were less likely than White residents to need increased help with daily activities.

Focus on Inpatient Rehabilitation Facility Patients

Patients receive rehabilitation therapies for a range of impairments from different types of providers and a major distinction is whether these services are received on an inpatient or outpatient basis. The method for assessing how a patient improves with receipt of rehabilitation services varies by provider type. Each Medicare-certified IRF collects measures of functional status (called the Functional Independence Measure or FIM) at admission and discharge for each Medicare patient as part of the IRF Patient Assessment Instrument.

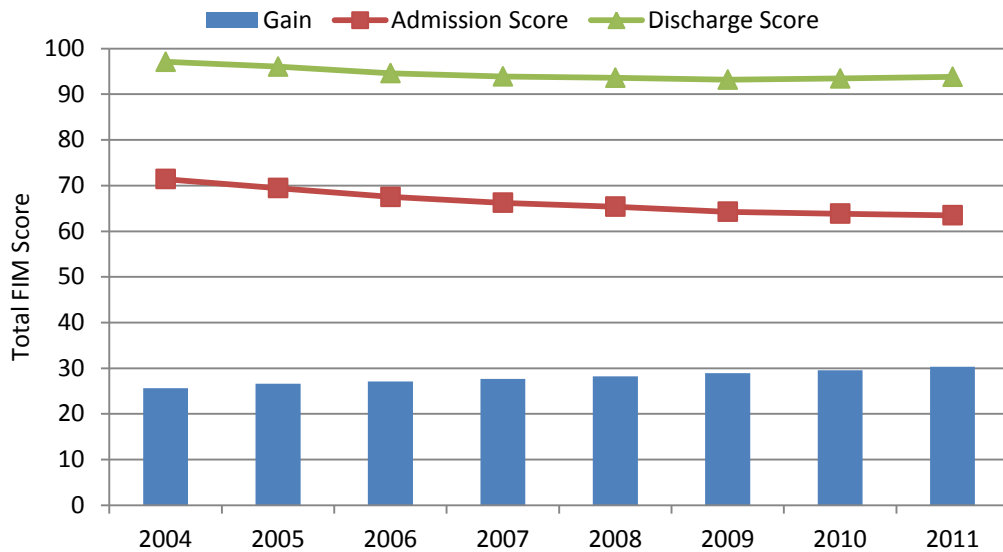
By providing information on the change in functional ability (or total functional gain) between admission and discharge, we can see how much patients have improved in functional ability during their stay in the IRFs. We restricted analyses to patients who had initial rehabilitation and were discharged to the community (home, board and care, transitional living, or assisted living) as a way of controlling for patient case mix.

The 2011 report focused on mean changes in locomotion and communication subscore gain for stroke patients, a subset of the total population. The estimates presented here include patients with all diagnoses and use a different method of scoring. The 2012 estimates should not be compared with estimates in the 2011 report.

^{xxxvii} The top 5 States that contributed to the achievable benchmark are Alabama, Alaska, New Jersey, Oklahoma, and Oregon.

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Figure 2.50. FIM scores at admission and discharge and changes in total functional gain among patients with all diagnoses in inpatient rehabilitation facilities, 2004-2011



Key: FIM = Functional Independence Measure.

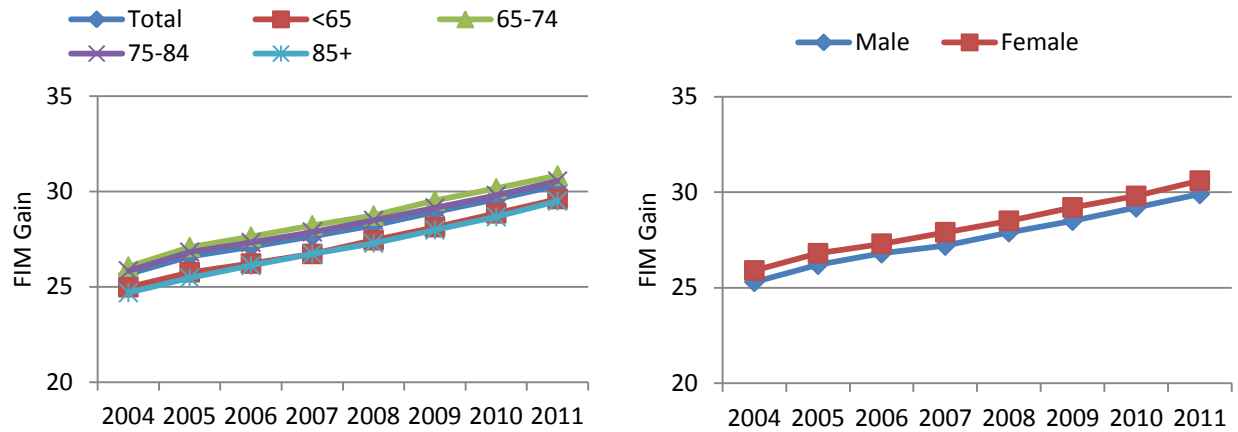
Source: Centers for Medicare & Medicaid Services, Inpatient Rehabilitation Facility Patient Assessment Instrument, 2004-2011.

Denominator: All Medicare patients in an inpatient rehabilitation facility for initial rehabilitation and discharged to the community (home, board and care, transitional living, or assisted living).

- In 2011, patients discharged to the community experienced an average FIM gain of 30.3; the average FIM score at admission was 63.5 and the average FIM score at discharge was 93.8 (score range: 7-126; highest score indicates complete independence).
- From 2004 to 2011, patients showed a trend toward an increase in functional gain but this was not statistically significant (Figure 2.50).
- Average FIM scores at admission decreased between 2004 and 2011.

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Figure 2.51. Changes in total functional gain among patients with all diagnoses in inpatient rehabilitation facilities, by age and gender, 2004-2011



Source: Centers for Medicare & Medicaid Services, Inpatient Rehabilitation Facility Patient Assessment Instrument, 2004-2011.

Denominator: All Medicare patients in an inpatient rehabilitation facility for initial rehabilitation and discharged to the community (home, board and care, transitional living, and assisted living).

- From 2004 to 2011, patients of all ages experienced an increase in FIM gain. In all years, patients ages 65-74 experienced the greatest FIM gain while patients age 85 and over and under age 65 experienced the least FIM gain.
- From 2004 to 2011, both male and female patients experienced an increase in FIM gain; there were no statistically significant differences in FIM gain between female and male patients (Figure 2.51).

Also, in the NHDR:

- In all years except 2004, non-Hispanic White patients experienced the greatest FIM gain while non-Hispanic Black and non-Hispanic Asian patients experienced the lowest FIM gain.

Supportive and Palliative Care

Importance

Demographics

Number of Medicare nursing home residents ever admitted during the calendar year (2011).....	2.6 million (CMS, 2012b)
Number of Medicare fee-for-service (FFS) home health patients ^{xxxviii} (2011).....	3.5 million (CMS, 2012c)
Number of Medicare FFS beneficiaries using Medicare hospice services (2011).....	1.2 million (CMS, 2012d)

Cost

Total costs of nursing home care ^{xxxix} (2010).....	\$143.1 billion (CMS, 2011)
Total costs of home health care ^{xxxix} (2010).....	\$70.2 billion (CMS, 2011)
Medicare FFS payments for hospice services (2011).....	\$13.8 billion (CMS, 2012d)

Measures

Disease cannot always be cured, and functional impairment cannot always be reversed. For patients with long-term health conditions, managing symptoms and preventing complications are important goals. Supportive and palliative care cuts across many medical conditions and is delivered by many health care providers. Supportive and palliative care focuses on enhancing patient comfort and quality of life and preventing and relieving symptoms and complications.

Toward the end of life, hospice care provides patients and families with practical, emotional, and spiritual support to help cope with death and bereavement. Honoring patient values and preferences for care is also critical. Palliative and end-of-life care needs to be “capable of promising dignity, comfort, companionship, and spiritual support to patients and families facing advanced illness or dying” (National Priorities Partnership, 2008).

The NHQR and NHDR track several measures of supportive and palliative care delivered by home health agencies, nursing homes, and hospices. The five measures presented in this section reflect patient- and family-centered care and goals and care planning, which are two of the critical areas of care delivery identified by the Measure Applications Partnership (MAP, 2012):

- Relief of suffering:
 - Shortness of breath among home health care patients.
 - Pressure sores in nursing home residents.
- Help with emotional and spiritual needs:
 - Right amount of emotional support among hospice patients.

^{xxxviii} Medicare FFS patients represent only a portion of all home health patients.

^{xxxix} Cost estimates for nursing home and home health services include only costs for freestanding skilled nursing facilities, nursing homes, and home health agencies and not those that are hospital based.

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- Effective communication:
 - Enough information about what to expect among hospice family caregivers.
- High-quality palliative care:
 - Care consistent with patient's wishes among hospice patients.

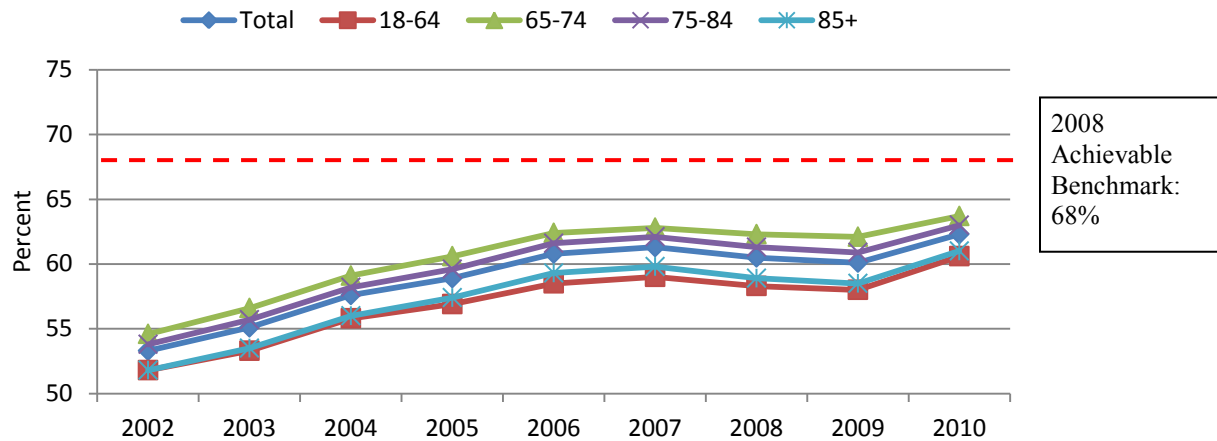
Findings

Relief of Suffering

Outcome: Shortness of Breath Among Home Health Care Patients

Shortness of breath is uncomfortable. Many patients with heart or lung problems experience difficulty breathing and may tire easily or be unable to perform daily activities. Doctors and home health staff should monitor shortness of breath and may give advice, therapy, medication, or oxygen to help lessen this symptom.

Figure 2.52. Adult home health care patients who had less shortness of breath between the start and end of a home health care episode, by age, 2002-2010



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set (OASIS), 2002-2010.
Denominator: Adult nonmaternity patients completing an episode of skilled home health care.
Note: Starting January 1, 2010, the patient assessment instrument for home health agencies was changed to OASIS-C. Because dyspnea improvement is measured similarly in both the previous and current versions of the assessment instrument, we are presenting 2002 through 2010 trend data.

- Between 2002 and 2010, the percentage of adult home health care patients who showed improvement in shortness of breath over the course of a home health episode increased for the total population (from 53.3% to 62.3%; Figure 2.52) and for every age group.
- The 2008 top 5 State achievable benchmark was 68%.^{x1} At the current annual rate of increase, this benchmark could be attained overall in about 5 years. Patients ages 65-74 and 75-84 could attain the benchmark sooner than 5 years, while patients ages 18-64 and 85 and over would take between 6 and 8 years to attain the benchmark.

Also, in the NHDR:

^{x1} The top 5 States that contributed to the achievable benchmark are Georgia, Hawaii, New Jersey, Rhode Island, and South Carolina.

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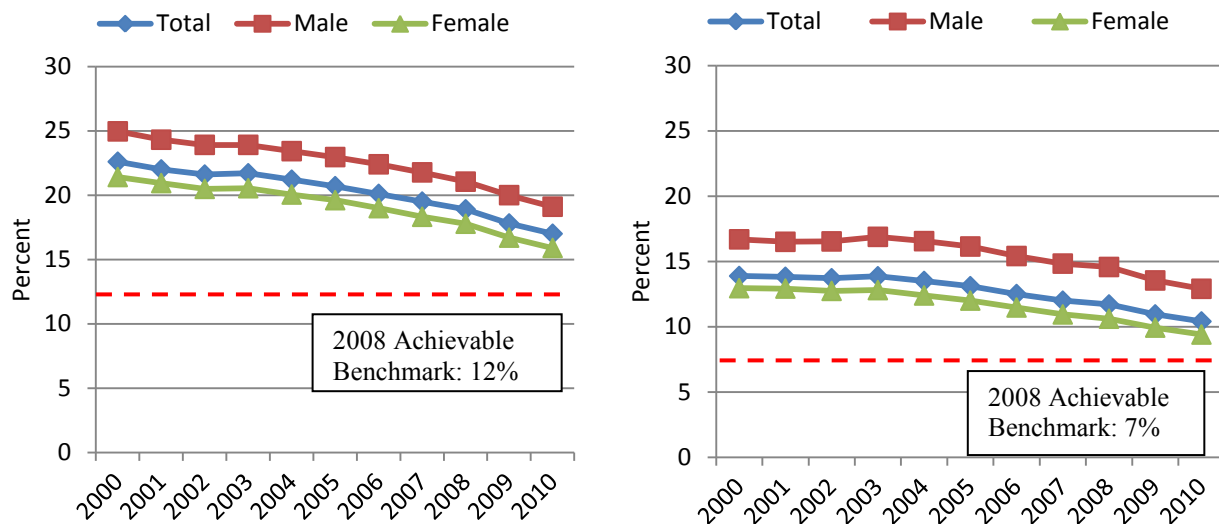
- Between 2002 and 2010, the percentage of adult home health care patients who showed improvement in shortness of breath increased for each racial and ethnic group except Hispanics.
- From 2006 to 2010, Hispanics were less likely than non-Hispanic Whites to show improvement in shortness of breath.

Outcome: Pressure Sores in Nursing Home Residents

A pressure ulcer, or pressure sore, is an area of broken-down skin caused by sitting or lying in one position for an extended time and can be very painful. Residents should be assessed by nursing home staff for presence or risk of developing pressure sores.

Nursing homes can help to prevent or heal pressure sores by keeping residents clean and dry and by changing their position frequently or helping them move around. Other interventions include making sure residents get proper nutrition and using soft padding to reduce pressure on the skin. However, some residents may get pressure sores even when a nursing home provides good preventive care.

Figure 2.53. Short-stay (left) and high-risk long-stay (right) nursing home residents with pressure sores, by gender, 2000-2010



Source: Centers for Medicare & Medicaid Services, Minimum Data Set, 2000-2010. Data for long-stay residents are from the third quarter of each calendar year. Data for short-stay residents are full calendar-year estimates.

Denominator: Short-stay and high-risk long-stay nursing home residents in Medicare- or Medicaid-certified nursing and long-term care facilities.

Note: For this measure, lower rates are better.

- From 2000 to 2010, the percentage of short-stay residents with pressure sores fell from 22.6% to 17% (Figure 2.53).^{xli} For high-risk long-stay residents, the percentage fell from

^{xli} Short-stay residents stay fewer than 30 days in a nursing home, typically following an acute care hospitalization.

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13.9% to 10.4%.^{xlii} Improvements included lower percentages for both males and females.

- Short-stay residents were more likely than high-risk long-stay residents to have pressure sores. Some of these patients may be admitted to nursing homes because of or with sores acquired during an acute care hospitalization.
- In all years, males were more likely than females to have pressure sores.
- The 2008 top 5 State achievable benchmark for short-stay residents was 12%.^{xliii} At the current annual rate of decrease, this benchmark could be attained overall in about 9 years. Females could attain this benchmark in about 7 years, while males would need 13 years.
- The 2008 top 5 State achievable benchmark for high-risk long-stay residents was 7%.^{xliv} At the current annual rate of decrease, this benchmark could be attained overall in about 9 years. Females could attain this benchmark in about 6 years, while males would need about 15 years.

Also, in the NHDR:

- From 2000 to 2010, the percentage of both short-stay and high-risk long-stay residents with pressure sores decreased for all racial/ethnic groups.
- In all years, for both short-stay and high-risk long-stay residents, Blacks and Hispanics were more likely than Whites to have pressure sores.

Help With Emotional and Spiritual Needs

Hospice care is generally delivered at the end of life to patients with a terminal illness or condition who desire palliative medical care; it also includes practical, psychosocial, and spiritual support for the patient and family. The goal of end-of-life care is to achieve a “good death,” defined by the IOM as one that is “free from avoidable distress and suffering for patients, families, and caregivers; in general accord with the patients’ and families’ wishes; and reasonably consistent with clinical, cultural, and ethical standards” (Field & Cassell, 1997).

The National Hospice and Palliative Care Organization’s Family Evaluation of Hospice Care survey examines the quality of hospice care for dying patients and their family members. Family respondents report how well hospices respect patients’ wishes, communicate about illness, control symptoms, support dying on one’s own terms, and provide family emotional support.^{xlv}

^{xlii} Long-stay residents enter a nursing facility typically because they can no longer care for themselves at home. They tend to remain in the facility for several months or years. High-risk residents are those who are in a coma, do not get the nutrients needed to maintain skin health, or cannot change position on their own.

^{xliii} The top 5 States that contributed to the achievable benchmark are Colorado, Iowa, Minnesota, Nebraska, and Utah.

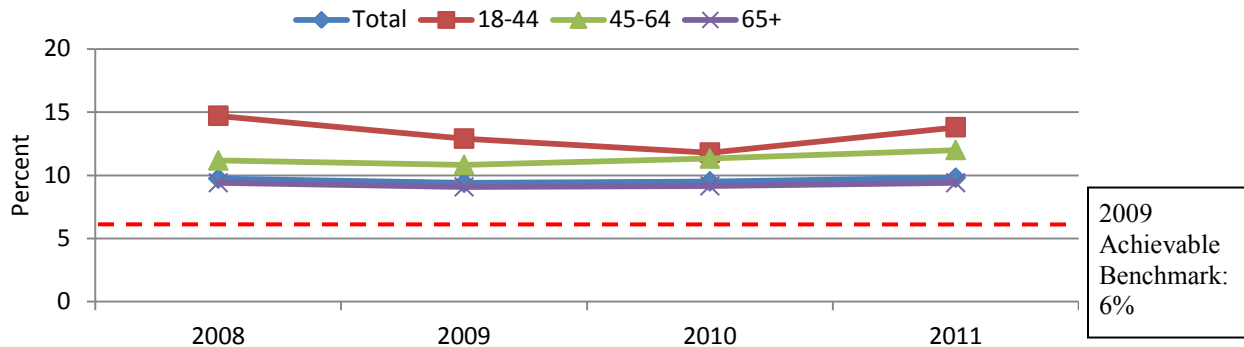
^{xliv} The top 5 States that contributed to the achievable benchmark are Hawaii, Minnesota, Nebraska, New Hampshire, and North Dakota.

^{xlv} This survey provides unique insight into end-of-life care and captures information about a large percentage of hospice patients but is limited by nonrandom data collection and a response rate of about 40%. Survey questions were answered by family members, who might not be fully aware of the patients’ wishes and concerns. These limitations should be considered when interpreting these findings.

Management: Right Amount of Emotional Support Among Hospice Patients

Dying is a stressful process, and patients at the end of life may develop depression or anxiety disorders. Health care systems and providers need to be attuned to recognizing and responding to the emotional and spiritual needs of patients with life-limiting illness and their families.

Figure 2.54. Hospice patients age 18 and over who did NOT receive the right amount of help for feelings of anxiety or sadness, by age, 2008-2011



Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2011.

Denominator: Adult hospice patients.

Note: For this measure, lower rates are better.

- The percentage of hospice patients whose families reported that they did not receive the right amount of help for feelings of anxiety or sadness was 9.8% in 2011 (Figure 2.54).
- In all years, hospice patients ages 18-44 and 45-64 were less likely than patients age 65 and over to receive the right amount of emotional support.
- The 2009 top 5 State achievable benchmark was 6%.^{xlvi} Overall, hospice patients are not making progress toward this goal.

Also, in the NHDR:

- In all years, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive the right amount of emotional support.

Effective Communication

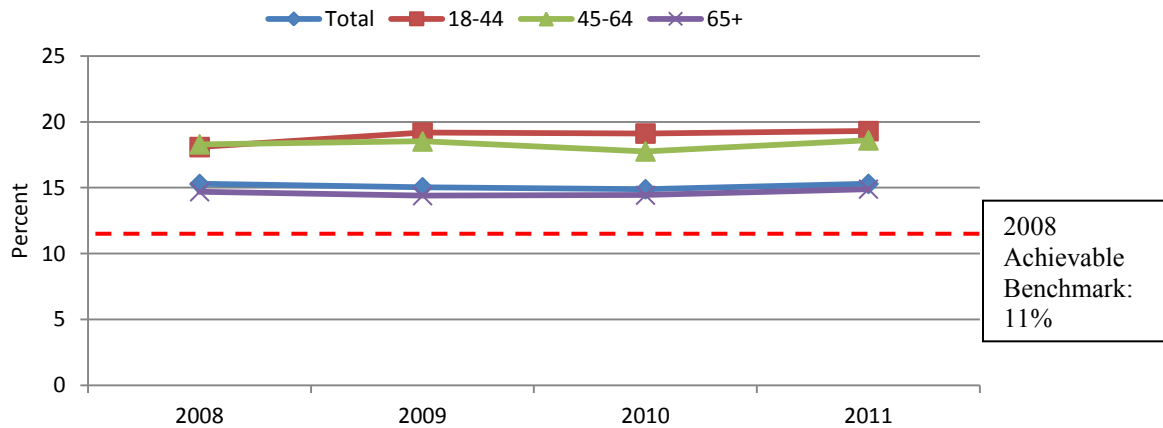
Management: Enough Information About What To Expect Among Hospice Family Caregivers

Patients at the end of life and their families need clear information about treatment options, prognosis, advance directives, and what to expect while the patient is dying. Health care providers need to be skilled at eliciting patient's values and preferences, accepting of different cultural and religious choices, and committed to continuing care regardless of patient treatment decisions.

^{xlvi} The top 5 States that contributed to the achievable benchmark are Alabama, Alaska, Arkansas, Kansas, and South Carolina.

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Figure 2.55. Hospice patients age 18 and over whose family caregivers wanted more information about what to expect while the patient was dying, by age, 2008-2011



Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2011.

Denominator: Adult hospice patients.

Note: For this measure, lower rates are better.

- The percentage of hospice patient family caregivers who reported that they wanted more information about what to expect while the patient was dying was 15.3% in 2011 (Figure 2.55).
- Between 2008 and 2011, family caregivers of hospice patients ages 18-44 and 45-64 were more likely than family caregivers of patients age 65 and over to want more information about what to expect while the patient was dying.
- The 2008 top 6 State achievable benchmark was 11%.^{xlvi} Overall, no progress has been made toward this goal.

Also, in the NHDR:

- In all years, family caregivers of API hospice patients were more likely than family caregivers of White patients to want more information about what to expect while the patient was dying. Family caregivers of Hispanic patients were more likely than family caregivers of non-Hispanic White patients to want more information.

High-Quality Palliative Care

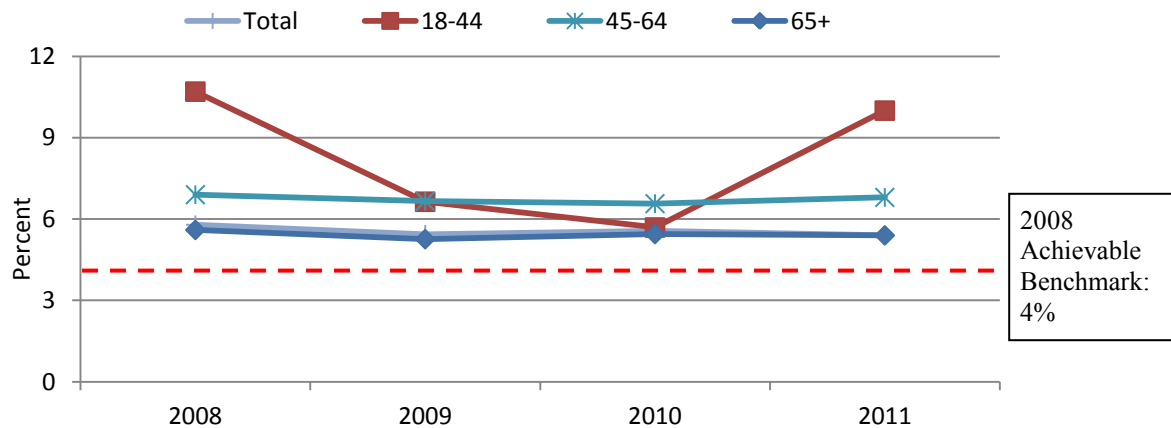
Management: Care Consistent With Patient's Wishes Among Hospice Patients

Hospice care should respect patients' stated goals for care. Respecting patients' goals requires shared communication and decisionmaking between providers and hospice patients and their family members and sensitivity to cultural and religious beliefs.

^{xlvi} The top 6 States that contributed to the achievable benchmark are Alabama, Idaho, Iowa (tie), Kansas, South Dakota (tie), and West Virginia.

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Figure 2.56. Hospice patients age 18 and over who did NOT receive care consistent with their stated end-of-life wishes, by age, 2008-2011



Source: National Hospice and Palliative Care Organization, Family Evaluation of Hospice Care, 2008-2011.

Denominator: Adult hospice patients.

Note: For this measure, lower rates are better.

- The percentage of hospice patients whose families reported that they did not receive end-of-life care consistent with their stated wishes was 5.4% in 2011 (Figure 2.56).
- In 2011, hospice patients ages 18-44 were less likely than patients ages 45-64 and 65 and over to receive end-of-life care consistent with their wishes.
- The 2008 top 5 State achievable benchmark was 4%.^{xlvi} At current rates of improvement, this benchmark could not be attained overall for about 19 years. Patients ages 65 and older could not achieve the benchmark for about 11 years, and patients ages 18-44 could not achieve the benchmark for 22 years. Patients ages 45-64 show no progress toward the benchmark.

Also, in the NHDR:

- From 2008 to 2011, Blacks, APIs, and AI/ANs were less likely than Whites and Hispanics were less likely than non-Hispanic Whites to receive end-of-life care consistent with their wishes.

^{xlvi} The top 5 States that contributed to the achievable benchmark are Maine, Minnesota, Mississippi, New Hampshire, and Tennessee.

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Chapter 3. Patient Safety

Importance

Mortality

Number of Americans who die each year from medical errors (1999 est.) 44,000-98,000 (Kohn, et al., 2000)

Prevalence

Rate of selected hospital-acquired conditions (2010 est.) 145 per 1,000 hospital admissions (HHS, 2012)
Adverse drug reactions during hospital admissions (annual est.) 49 per 1,000 hospital admissionsⁱ
Rate of adverse drug events among Medicare beneficiaries in ambulatory settings 50 per 1,000 person-years (Gurwitz, et al., 2003)

Cost

Cost attributable to medical errors (2008) \$19.5 billion (Shreve, et al., 2010)
Total cost per error (2008) \$13,000 (Shreve, et al., 2010)
Annual cost attributable to surgical errors (2008) \$1.5 billion (Encinosa & Hellinger, 2008)

Measures

The Institute of Medicine (IOM) defines patient safety as “freedom from accidental injury due to medical care or medical errors” (Kohn, et al., 2000). In 1999, the IOM published *To Err Is Human: Building a Safer Health System*, which called for a national effort to reduce medical errors and improve patient safety (Kohn, et al., 2000).

In response to the IOM’s report, President George W. Bush signed the Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act).ⁱⁱ The act was designed to spur the development of voluntary, provider-driven initiatives to improve the quality, safety, and outcomes of patient care. The Patient Safety Act addresses many of the current barriers to improving patient care.

Central to this effort is the ability to measure and track adverse events. Measuring patient safety is complicated by difficulties in assessing and ensuring the systematic reporting of medical errors and adverse events. All too often, adverse event reporting systems are laborious and cumbersome. Health care providers may also fear that if they participate in the analysis of medical errors or patient care processes, the findings may be used against them in court or harm their professional reputations. In addition, many factors limit the ability to aggregate data in sufficient numbers to rapidly identify prevalent risks and hazards in the delivery of patient care,

ⁱ Calculated by Noel Eldridge of the Center for Quality Improvement and Patient Safety, Agency for Healthcare Research and Quality. This number is a subset calculation based on the medication-related measures that were used to calculate the overall hospital-acquired condition rate for 2010.

ⁱⁱ Patient Safety and Quality Improvement Act of 2005, 42 U.S.C. 299b-21 to 299b-26.

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their underlying causes, and practices that are most effective in mitigating them. These include difficulties aggregating and sharing data confidentially across facilities or State lines.

To Err Is Human does not mention race or ethnicity when discussing the problem of patient safety, and data are limited. Any differences that suggest patient race or ethnicity might influence the risk of experiencing a patient safety event must be investigated to better understand the underlying reasons for any differences before the differences can be eliminated.

Despite these limitations, a more complete picture of patient safety is emerging. In recent years, progress has been made in raising awareness, developing reporting systems, and establishing national data collection standards. Examining patient safety using a combination of administrative data, medical record abstraction, spontaneous adverse event reports, and patient surveys allows a more robust understanding of what is improving and what is not. Still, data remain incomplete for a comprehensive national assessment of patient safety (Aspden, et al., 2004).

To increase access to high-quality, affordable health care for all Americans, one of the broad aims of the National Quality Strategy (NQS) is providing better care. One way to advance this aim is by focusing on the priority of making care safer by reducing harm caused during the delivery of care. This priority has great potential for rapidly improving health outcomes and increasing the effectiveness of care for all populations. The NQS states that health care providers should aim to reduce the rates of care-related injury to zero whenever possible and should strive to create a system that reliably provides high-quality health care for everyone.

The Department of Health and Human Services (HHS) created the Partnership for Patients to improve the quality, safety, and affordability of health care for all Americans. One of the goals of this partnership is to:

- Keep patients from getting injured or sicker.
 - By the end of 2013, preventable hospital-acquired conditions would decrease by 40% compared with 2010. Achieving this goal would mean approximately 1.8 million fewer injuries to patients, with more than 60,000 lives saved over 3 years.

Achieving the partnership's goals will save lives and prevent injuries to millions of Americans. In addition, up to \$35 billion could be saved across the health care system, including up to \$10 billion in Medicare savings over a period of 3 years. Over a period of 10 years, it could reduce costs to Medicare by about \$50 billion and result in billions more in Medicaid savings. This will help put our Nation on the path toward a more sustainable health care system.

The *National Healthcare Quality Report* (NHQR) has tracked a growing number of patient safety measures. Organized around the Partnership for Patients' priority of safety, the 2012 NHQR presents the following measures that relate to the goal to keep patients from getting injured or sicker:

- Healthcare-associated infections (HAIs):
 - Postoperative sepsis.

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- Catheter-associated urinary tract infections (UTIs).
- Central line-associated bloodstream infections (CLABSIs).
- Standardized infection ratios for CLABSIs.
- CLABSIs in pediatric and neonatal intensive care units.
- Adverse events:
 - Mechanical adverse events associated with central venous catheters.
 - Obstetric trauma.
 - Overall hospital-acquired condition rate.
- Patient safety culture:
 - Results from the 2011 Hospital Survey on Patient Safety Culture.

Two measures related to HAIs have reached the 95% threshold and have therefore been retired:

- Appropriate care among surgical patients.
- Appropriate timing of antibiotics among surgical patients.

Findings

Healthcare-Associated Infections

Infections acquired during hospital care (nosocomial infections) are one of the most serious patient safety concerns. They are the most common complication of hospital care (Gastmeier, 2004). An estimated 1.7 million HAIs occur each year in hospitals, leading to about 100,000 deaths. The most common infections are urinary tract, surgical site, and bloodstream infections (Klevens, et al., 2007).

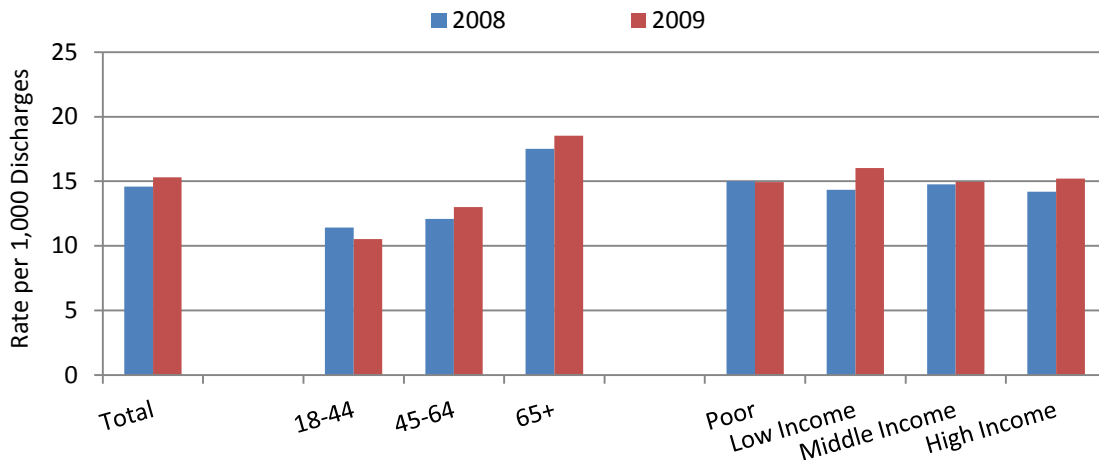
A specific medical error cannot be identified in most cases of HAIs. However, better application of evidence-based preventive measures can reduce HAI rates within an institution.

Outcome: Postoperative Sepsis

Sepsis, a severe bloodstream infection, can occur after surgery. In a recent study, postoperative sepsis occurred in 5% of emergency surgery patients and 2% of elective surgery patients (Moore, et al., 2010). Another study revealed that higher rates of infection and higher risk of acute organ dysfunction both contribute to higher sepsis rates among Blacks compared with Whites (Mayr, et al., 2010). One way to reduce sepsis rates is by giving patients appropriate prophylactic antibiotics 1 hour prior to surgical incision.

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Figure 3.1. Postoperative sepsis per 1,000 adult elective-surgery discharges with an operating room procedure, by age and income, 2008-2009



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, version 4.1.

Denominator: All elective hospital surgical discharges, age 18 and over, with length of stay of 4 or more days, excluding patients admitted for infection, patients with cancer or immunocompromised states, patients with obstetric conditions, and admissions specifically for sepsis.

Note: For this measure, lower rates are better. Rates are adjusted by age, gender, age-gender interactions, comorbidities, major diagnostic category (MDC), diagnosis-related group (DRG), and transfers into the hospital. When reporting is by age, the adjustment is by gender, comorbidities, MDC, DRG, and transfers into the hospital.

- Between 2008 and 2009, there were no significant differences in the overall rate of postoperative sepsis.
- In 2009, surgery patients ages 18-44 had significantly lower rates of postoperative sepsis than those ages 45-64 and those age 65 and over (10.5 per 1,000 hospital discharges compared with 13 and 18.5, respectively; Figure 3.1).
- In 2009, there were no significant income differences in the rates of postoperative sepsis.

Also, in the NHDR:

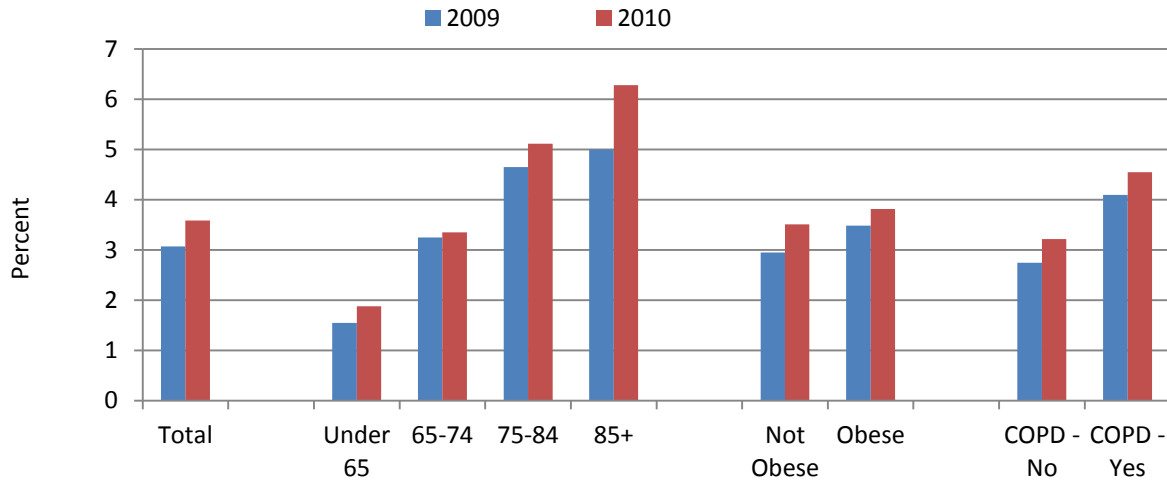
- In 2009, Whites had a significantly lower rate of postoperative sepsis than Blacks, APIs, and Hispanics.

Outcome: Catheter-Associated Urinary Tract Infections

The urinary tract is a common site of HAI. Urinary catheter use and specific comorbid conditions can increase the risk of developing a UTI. Approximately 40% of all HAIs are attributed to catheter-associated UTIs (Niel-Weise & van den Broek, 2005).

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Figure 3.2. Adult surgery patients with postoperative catheter-associated urinary tract infection, overall and by age, obesity, and COPD status, 2009-2010



Key: COPD = chronic obstructive pulmonary disease.

Source: Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2009-2010.

Denominator: Selected discharges of hospitalized patients age 18 and over having major surgery and meeting specific criteria for each measure.

Note: For this measure, lower rates are better.

- In 2010, adult surgery patients ages 65 to 74, 75 to 84, and 85 and over had a higher percentage of catheter-associated UTIs compared with adult surgery patients under age 65 (3.4%, 5.1%, and 6.3%, respectively, compared with 1.9%; Figure 3.2).
- In 2010, there was no statistically significant difference between the percentage of obese and nonobese adult surgery patients with catheter-associated UTIs. However, the percentage of adult surgery patients with catheter-associated UTIs infections was higher for patients with COPD than for patients without COPD (4.6% compared with 3.2%).

Also, in the NHDR:

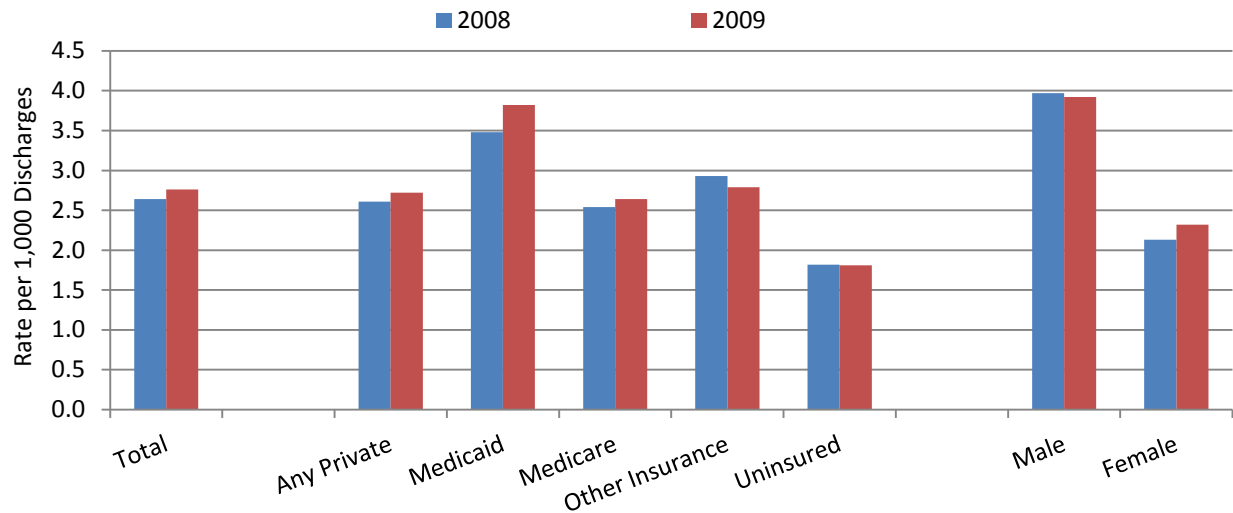
- In 2010, Hispanic adult surgery patients had a higher percentage of catheter-associated UTIs than Whites.
- Also in 2010, adult surgery patients with diabetes had a higher percentage of catheter-associated UTIs than adult surgery patients without diabetes.
- In 2010, female surgery patients had a higher percentage of catheter-associated UTIs than male surgery patients.

Outcome: Central Line-Associated Bloodstream Infections

Patients who require a central venous catheter inserted into the great vessels leading to the heart tend to be severely ill. However, the placement and use of these catheters can result in infections and other complications.

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Figure 3.3. Adult admissions with central venous catheter-related bloodstream infections per 1,000 medical and surgical discharges of length 2 or more days, by insurance status and gender, 2008-2009



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, version 4.1, 2008-2009.

Denominator: People age 18 and over or obstetric admissions.

Note: For this measure, lower rates are better.

- In 2009, patients with Medicaid had higher rates of bloodstream infections than those with any private insurance (3.8 per 1,000 discharges compared with 2.7; Figure 3.3). Those who were uninsured had the lowest rates (1.8).
- Also, in 2009, male patients had higher rates of bloodstream infections than female patients (3.9 compared with 2.3).

New

Outcome: Standardized Infection Ratios for Central Line-Associated Bloodstream Infections

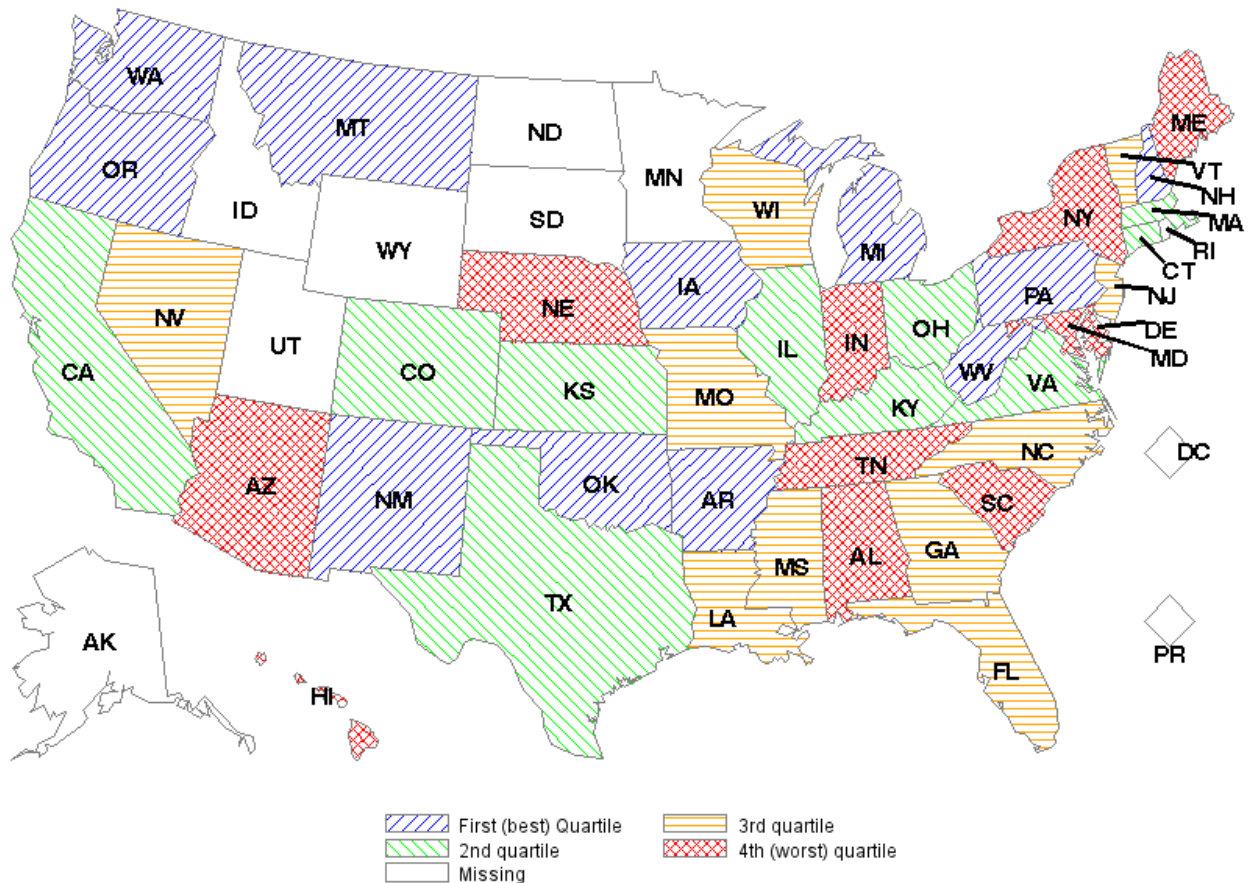
Calculation of standardized infection ratios for CLABSIs compares the number of central line infections in a hospital's intensive care unit (ICU) to a national benchmark based on data reported to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) from 2006 to 2008. The results are adjusted based on certain factors such as the type and size of a hospital or ICU.

- A score of less than 1 means that the hospital had fewer CLABSIs than hospitals of similar type and size.
- A score of 1 means the hospital's CLABSI score was no different than hospitals of similar type and size.
- A score of more than 1 means the hospital had more CLABSIs than hospitals of similar type and size.

Lower numbers are better. A score of zero, meaning no CLABSIs, is best. The map below shows States that fall into various score ranges, by quartile.

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Figure 3.4. State variation: Standardized infection ratios for central line-associated bloodstream infections, 2010



Source: Centers for Disease Control and Prevention, National Healthcare Safety Network, 2010.

Denominator: Infections per 100,000 central-line days.

- Interquartile ranges were:
 - Worst quartile: 0.859-1.098
 - 2nd worst quartile: 0.705-0.858
 - 2nd best quartile: 0.579-0.704
 - Best quartile: 0.411-0.578
- The States in the Southeast tended to fare worse than the remainder of the Nation (Figure 3.4).

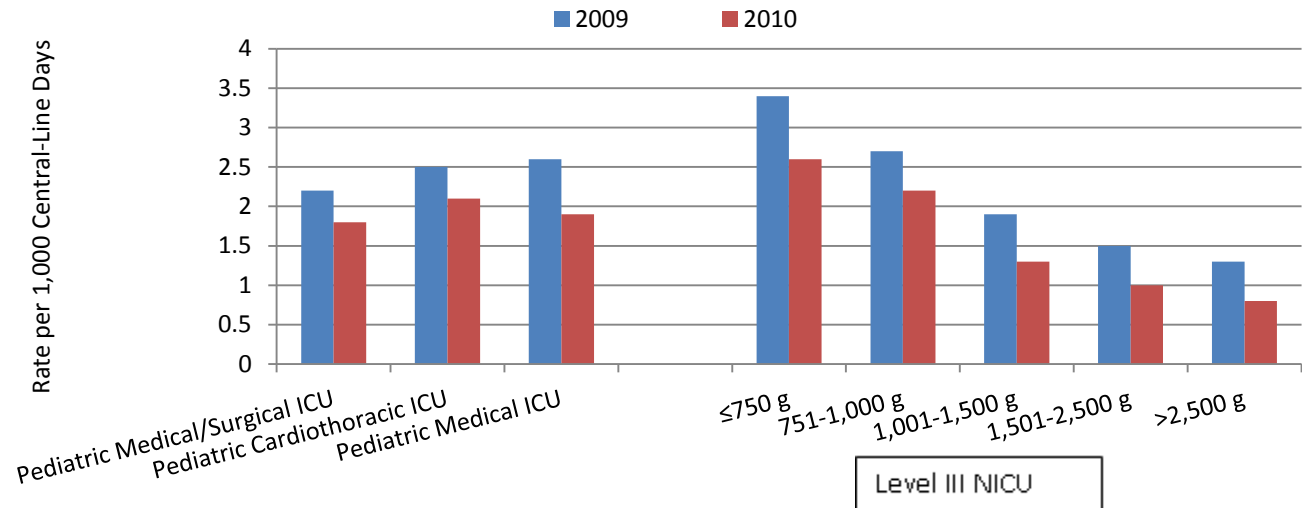
Outcome: Central Line-Associated Bloodstream Infections in Pediatric and Neonatal Intensive Care Units

Bloodstream infections often increase hospital length of stay, risk of mortality, and hospital costs. In the inpatient setting, they are often associated with the use of central venous lines that are passed into the great vessels leading to the heart to administer medications or fluids, draw blood for tests, or directly obtain cardiovascular measurements.

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Children who require central lines are often already in critical condition due to illness, trauma, or premature birth; any new infections generally reduce their chances for recovery. Proper insertion and management of central lines can lower infection rates significantly.

Figure 3.5. Bloodstream infections per 1,000 central-line days, by type of pediatric intensive care unit and birth weight of child, 2009-2010



Key: ICU = intensive care unit.

Source: Centers for Disease Control and Prevention, National Healthcare Safety Network, 2009-2010.

Denominator: Infections per 1,000 central-line days.

Note: For this measure, lower rates are better.

- In 2010, the pooled mean rates of CLABSIs were 1.8 per 1,000 central-line days for medical-surgical ICUs, 2.1 per 1,000 central-line days for cardiothoracic ICUs, and 1.9 per 1,000 central-line days for medical ICUs (Figure 3.5).
- Among patients in the Level III neonatal ICU, in 2010, the pooled mean CLABSI rates ranged from a low of 0.8 per 1,000 central-line days among neonates born at >2,500 g to a high of 2.6 per 1,000 central-line days among neonates born at ≤750 g.

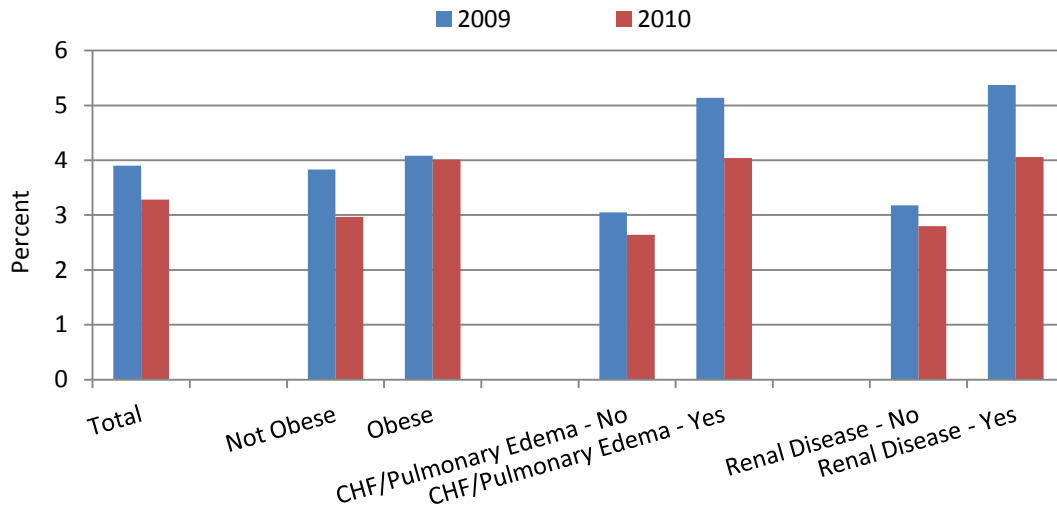
Adverse Events

Outcome: Mechanical Adverse Events Associated With Central Venous Catheters

Some patients need a central venous catheter inserted into a major vein in the neck, chest, or groin so that providers can administer medication or fluids, obtain blood for tests, and take cardiovascular measurements. Patients who require a central venous catheter tend to be severely ill. The placement and use of these catheters can result in mechanical adverse events, including bleeding; hematoma; perforation; pneumothorax; air embolism; and misplacement, occlusion, shearing, or knotting of the catheter.

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Figure 3.6. Composite: Mechanical adverse events associated with central venous catheter placement, by obesity status, CHF/pulmonary edema status, and renal disease status, 2009-2010



Key: CHF = congestive heart failure.

Source: Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2009-2010.

Denominator: Selected discharges of hospitalized patients age 18 and over with central venous catheter placement.

Note: For this measure, lower rates are better. Mechanical adverse events include allergic reaction to the catheter, tamponade, perforation, pneumothorax, hematoma, shearing off of the catheter, air embolism, misplaced catheter, thrombosis or embolism, knotting of the pulmonary artery catheter, and certain other events.

- In 2010, the percentage of hospitalized adults with adverse events associated with central venous catheter placement was higher for adults with obesity than for those without obesity (Figure 3.6; 4.0% compared with 3.0%).
- Also, in 2010, the percentage of hospitalized adults with adverse events associated with central venous catheter placement was higher for adults with coronary heart failure or pulmonary edema than for those without coronary heart failure or pulmonary edema (4.0% compared with 2.6%).
- In 2010, there was no statistically significant difference between hospitalized adults with renal disease and those without renal disease in the percentage with adverse events associated with central venous catheter placement.

Also, in the NHDR:

- In 2010, there were no statistically significant differences by race, gender, or age in the percentage of mechanical adverse events associated with central venous catheter placement.

Outcome: Obstetric Trauma

Childbirth and reproductive care are the most common reasons for women of childbearing age to use health care services. As 11,300 babies are born each day in the United States (Martin, et al., 2011), childbirth is the most common reason for hospital admission among women.

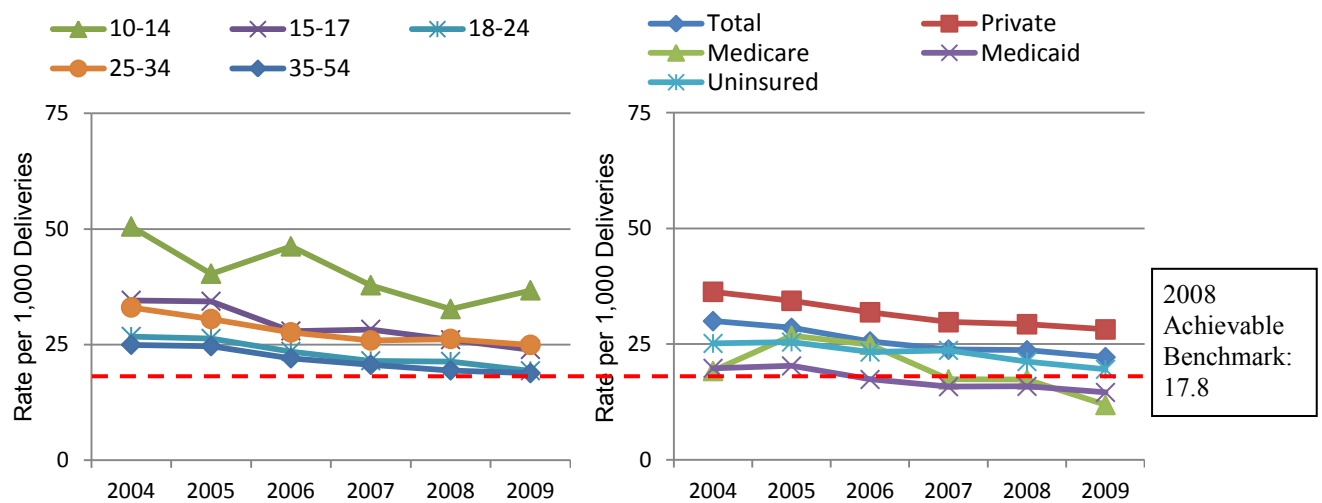
Obstetric trauma involving a severe tear to the vagina or surrounding tissues during delivery is a common complication of childbirth. Higher risks of severe (i.e., 3rd or 4th degree) perineal

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laceration may be related to the degree of fetal-maternal size disproportion. Adolescents, who often have smaller body sizes because they have not finished growing, may be more likely to experience obstetric trauma than older women (Riskin-Mashiah, et al., 2002). In addition, although any delivery can result in trauma, existing evidence shows that severe perineal trauma can be reduced by restricting the use of episiotomies and forceps (Kudish, et al., 2008).

Previous reports used AHRQ Quality Indicators version 3.1 to generate obstetric trauma rates. As of 2011, the reports use a modified version 4.1 of the software. While the effects of version change are extremely small, these estimates should not be compared with estimates in previous reports.

Figure 3.7. Obstetric trauma with 3rd or 4th degree laceration per 1,000 vaginal deliveries without instrument assistance, by age and insurance, 2004-2009



Key: Private indicates private health insurance as the payment source; uninsured indicates self-pay, uninsured, and no charge as the payment source.

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, modified version 4.1.

Denominator: All patients hospitalized for vaginal delivery without indication of instrument assistance.

Note: For this measure, lower rates are better. Rates are adjusted by age. Rates by age are not age adjusted.

- From 2004 to 2009, rates of obstetric trauma with 3rd or 4th degree laceration decreased from 30 to 22.2 per 1,000 vaginal deliveries without instrument assistance (Figure 3.7). The rates for all age and insurance groups improved except Medicare beneficiaries.
- In all years, mothers ages 18-24 and 35-54 had lower rates of obstetric trauma than mothers ages 25-34. Mothers with Medicare, Medicaid, and no insurance had lower rates of obstetric trauma than mothers with private health insurance.
- The 2008 top 4 State achievable benchmark was 17.8 per 1,000 deliveries.ⁱⁱⁱ At the current annual rate of decrease, this benchmark could be attained within 6 years by most age groups and insurance types. Mothers with Medicare and Medicaid have already achieved the benchmark.

ⁱⁱⁱ The top 4 States that contributed to the achievable benchmark are South Dakota, Utah, West Virginia, and Wyoming.

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Also, in the NHDR:

- In all years, API mothers had higher rates of obstetric trauma than White mothers. In the same period, Black and Hispanic mothers had lower rates of obstetric trauma than White mothers.
- From 2004 to 2009, residents of the lower three area income quartiles had lower rates than residents of the highest area income quartile.

New

Outcome: Overall Hospital-Acquired Condition Rate

The 2010 rate of hospital-acquired conditions (HACs) was developed to track the national rate of HACs pursuant to the mandate of the Social Security Act. The rate is based on 28 different measures from three sources of national data:

- Medicare Patient Safety Monitoring System (MPSMS) implemented by AHRQ and the Centers for Medicare & Medicaid Services (CMS),
- Patient Safety Indicators (PSIs) implemented by AHRQ, and
- NHSN implemented by CDC.

Although the 28 measures have been combined to create a measurable rate that can be tracked, the rate should not be considered an all-inclusive HAC rate for CMS payment purposes.

Nine specific HACs are listed, as well as an Other category, but some important types of adverse events are not included in the rate due to a lack of data. For example, the rate does not include adverse drug events due to narcotics or allergies, venous thromboembolic events in nonsurgical patients, and most infections that are hospital acquired but produce symptoms after hospital discharge. In addition, the “All Other HACs” category covers 14 specific HACs, such as *Clostridium difficile* infection and contrast nephropathy, but does not include every type of HAC beyond the nine specific HACs. For example, retained surgical items and wrong-site surgeries are not included in “All Other HACs.”

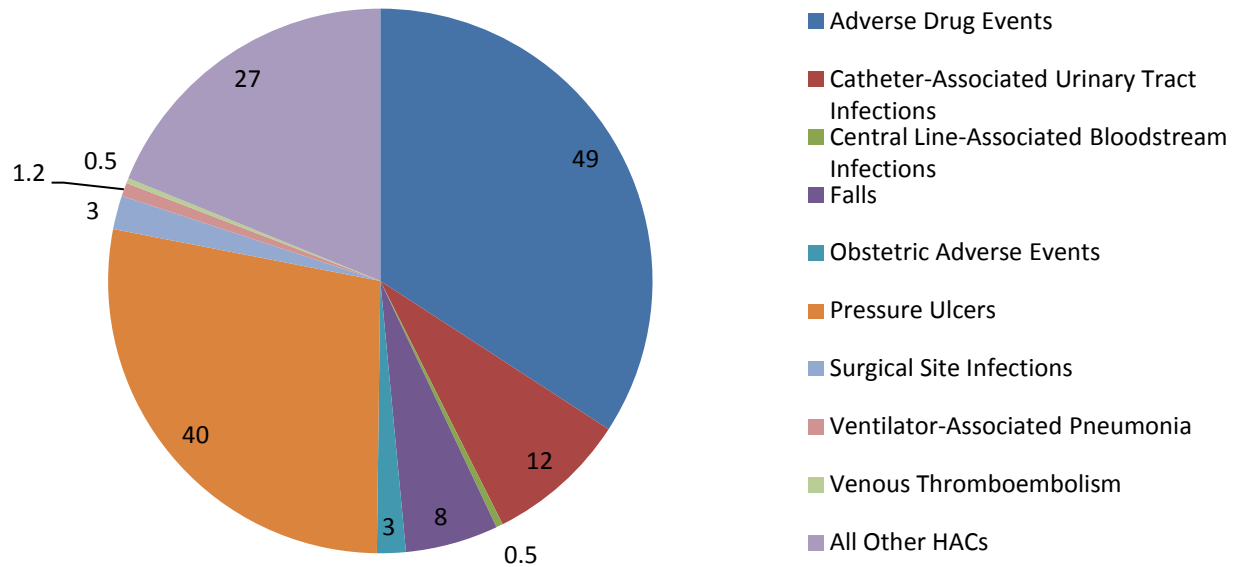
The raw data from the MPSMS system in 2010 are not shown. Those data were based solely on patients from four patient groups whose charts were requested by CMS for hospitals as part of the Inpatient Quality Reporting Program. These groups included all-age (>17 years old) all-payer patients with a principal diagnosis of:

1. Pneumonia,
2. Acute myocardial infarction,
3. Heart failure, or
4. Major surgery (as described based on the Surgical Care Improvement Project).

The data shown are based on rates estimated to be reflective of the entire population over 17 rather than on the raw data from the four groups of patients.

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Figure 3.8. 2010 distribution of hospital-acquired conditions, national overall hospital-acquired condition rate, per 1,000 hospital admissions



Source: Agency for Healthcare Research and Quality, Medicare Patient Safety Monitoring System, 2010; Centers for Disease Control and Prevention, National Healthcare Safety Network, 2009-2010; and Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Inpatient Sample and AHRQ Quality Indicators, version 4.1.

Note: People age 18 and over. Estimates are rounded to the nearest tenth.

- In 2010, the national overall HAC rate was 145 per 1,000 hospital admissions (Figure 3.8).
- The overall HAC rate includes:
 - Adverse drug events (49 per 1,000 hospital admissions [34.2% of total]).
 - Pressure ulcers (40 per 1,000 hospital admissions [27.8% of total]).
 - Catheter-associated UTIs (12 per 1,000 hospital admissions [8.4% of total]).
 - Falls (8 per 1,000 hospital admissions [5.5% of total]).
 - Surgical site infections (3 per 1,000 hospital admissions [2.0% of total]).
 - Obstetric adverse events (3 per 1,000 hospital admissions [1.7% of total]).
 - Ventilator-associated pneumonia (1.2 per 1,000 hospital admissions [0.8% of total]).
 - CLABSIs (0.5 per 1,000 hospital admissions [0.4% of total]).
 - Venous thromboembolism (0.5 per 1,000 hospital admissions [0.3% of total]).
 - All other HACs (27 per 1,000 hospital admissions [18.8%]).^{iv}

^{iv} All Other HACs includes: femoral artery puncture for catheter angiographic procedures, adverse event associated with hip joint replacement, adverse event associated with knee joint replacement, contrast nephropathy associated with catheter angiography, hospital-acquired methicillin-resistant *Staphylococcus aureus* (MRSA), hospital-acquired vancomycin-resistant *Enterococcus* (VRE), hospital-acquired antibiotic-associated *C. difficile*, mechanical complications associated with central venous catheters, postoperative cardiac events for cardiac and noncardiac surgeries, postoperative pneumonia, iatrogenic pneumothorax (PSI 6), postoperative hemorrhage or hematoma (PSI 9), postoperative respiratory failure (PSI 11), and accidental puncture or laceration (PSI 15).

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Patient Safety Culture

Measuring patient safety directly is difficult because of the complexity of systematically reporting medical errors and adverse events. High-reliability organizations that achieve low rates of adverse events establish “cultures of safety.” A culture of safety is characterized by shared dedication to making work safe, blame-free reporting and communication about error, collaboration and teamwork across disciplines, and adequate resources to prevent adverse events.

AHRQ developed the Hospital Survey on Patient Safety Culture to help hospitals assess the culture of safety in their facilities. AHRQ began producing comparative database reports in 2007 to help hospitals assess their performance relative to similar institutions.

In this NHQR, we present data from the *Hospital Survey on Patient Safety Culture: 2012 User Comparative Database Report*. This report is based on survey responses collected from 567,703 hospital staff in 1,128 hospitals representing approximately 18% of the Nation’s hospitals. The average hospital response rate was 53%, with an average of 503 completed surveys per hospital.

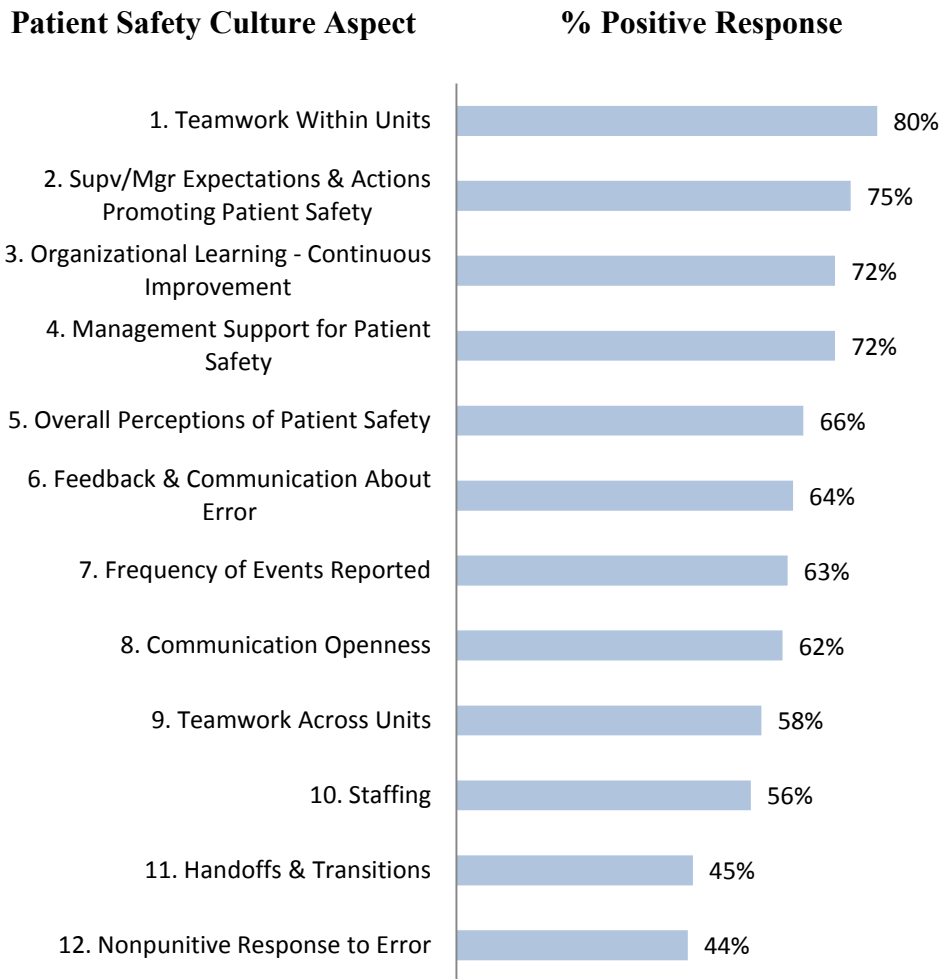
Most hospitals administered Web surveys (66%), up from 25% in 2007, when most hospitals administered paper surveys, and up from 56% in 2011. Web surveys resulted in slightly lower response rates (51%) than response rates from paper surveys (61%) but were about the same as mixed-mode administered surveys (49%). Most hospitals administered the survey to all staff or a sample of all staff from all hospital departments. Nurses accounted for more than one-third of respondents. More than three-quarters of respondents had direct interaction with patients.

Results are presented for the 12 patient safety culture composites assessed in the survey, as an average percent positive response. Percent positive refers to the percentage of responses that agree or strongly agree with a positively worded item (e.g., “People support one another in this unit”) and the percentage that disagree or disagree strongly with a negatively worded item (e.g., “We have patient safety problems in this unit”). Hospitals contributing data to the comparative database mirror the population of U.S. hospitals as a whole, but participation is entirely voluntary.

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Figure 3.9. 2011 patient safety culture composite findings



Source: U.S. Agency for Healthcare Research and Quality, *Hospital Survey on Patient Safety Culture: 2012 User Comparative Database Report*.

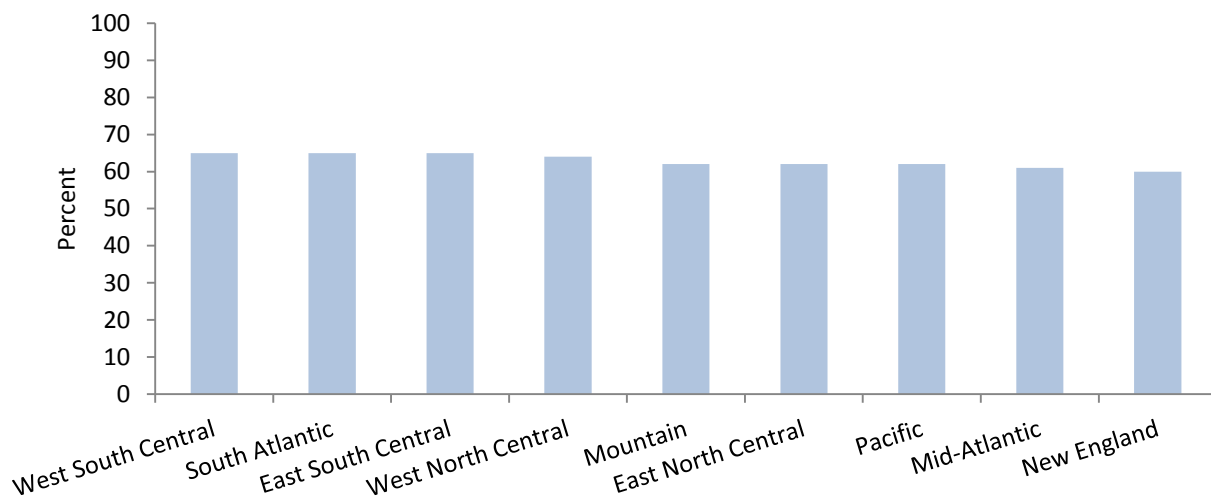
Denominator: Hospital staff responding to the 2011 Hospital Survey on Patient Safety Culture.

- One strength for most hospitals was Teamwork Within Units, the extent to which staff support each other, treat each other with respect, and work together (Figure 3.9). Another strong area for hospitals overall was Supervisor/Manager Expectations and Actions Promoting Patient Safety. This composite refers to the extent to which supervisors/managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems.
- There are two areas with potential for improvement for hospitals: Nonpunitive Response to Error and Handoffs and Transitions. Nonpunitive Response to Error is the extent to which staff feel that event reports and their own mistakes are not held against them and that mistakes are not kept in their personnel file. Handoffs and Transitions refers to the extent to which important patient safety care information is transferred across hospital units and during shift changes.

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- On average, most respondents within hospitals (55%; data not shown) reported no events in their hospital over the past 12 months. It is likely that this represents underreporting of events and is therefore another area of improvement for most hospitals.
- One-fifth of the database hospitals were government owned. More staff in government-owned hospitals did not report any events (59%) versus non-government owned (54%; data not shown).
- The hospitals varied in size, from small hospitals (22% had less than 49 beds) to large hospitals (39% had 200 beds or more). In general, larger hospitals tended to have lower patient safety culture scores across a range of composites than smaller hospitals (data not shown).

Figure 3.10. 2011 overall average patient safety culture percent positive response across composites by geographic region



Source: U.S. Agency for Healthcare Research and Quality, *Hospital Survey on Patient Safety Culture: 2012 User Comparative Database Report*.

Denominator: Hospital staff responding to the 2011 Hospital Survey on Patient Safety Culture.

- Hospitals in the West South Central, South Atlantic/Associated Territories, and East South Central census divisions^v had the highest average patient safety culture scores across all composites, although the differences by region were small. These same three regions and New England also had the highest percentage of staff not reporting any events in the past 12 months.

^v States and territories are categorized into AHA-defined regions as follows:

- New England: CT, MA, ME, NH, RI, VT
- Mid-Atlantic: NJ, NY, PA
- South Atlantic/Associated Territories: DC, DE, FL, GA, MD, NC, SC, VA, WV, PR, VI
- East North Central: IL, IN, MI, OH, WI
- East South Central: AL, KY, MS, TN
- West North Central: IA, KS, MN, MO, ND, NE, SD
- West South Central: AR, LA, OK, TX
- Mountain: AZ, CO, ID, MT, NM, NV, UT, WY
- Pacific/Associated Territories: AK, CA, HI, OR, WA, AS, GU, MH, MP

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Chapter 4. Timeliness

Timeliness in health care is the system's capacity to provide care quickly after a need is recognized. It is one of the six dimensions of quality the Institute of Medicine established as a priority for improvement in the health care system (IOM, 2001). Measures of timeliness include time spent waiting in doctors' offices and emergency departments (EDs) and the interval between identifying a need for specific tests and treatments and actually receiving services.

Importance

Morbidity and Mortality

- Lack of timeliness can result in emotional distress, physical harm, and higher treatment costs for patients (Boudreau, et al., 2004).
- Stroke patients' mortality and long-term disability are largely influenced by the timeliness of therapy (Kwan, et al., 2004).
- Timely delivery of appropriate care can help reduce mortality and morbidity for chronic conditions, such as kidney disease (Kinchin, et al., 2002).
- Timeliness in childhood immunizations helps maximize protection from vaccine-preventable diseases while minimizing risks to the child and reducing the chance of disease outbreaks (Luman, et al., 2005).
- Timely antibiotic treatments are associated with improved clinical outcomes (Houck & Bratzler, 2005).

Cost

- Early care for comorbid conditions has been shown to reduce hospitalization rates and costs for Medicare beneficiaries (Himelhoch, et al., 2004).
- Some research suggests that, over the course of 30 years, the costs of treating diabetic complications can approach \$50,000 per patient (Caro, et al., 2002). Early care for complications in patients with diabetes can reduce overall costs of the disease (Ramsey, et al., 1999).
- Timely outpatient care can reduce admissions for pediatric asthma, which account for more than \$1.25 billion in total hospitalization charges annually (AHRQ, 2009).

Measures

This report includes three measures related to timeliness of primary, emergency, and hospital care:

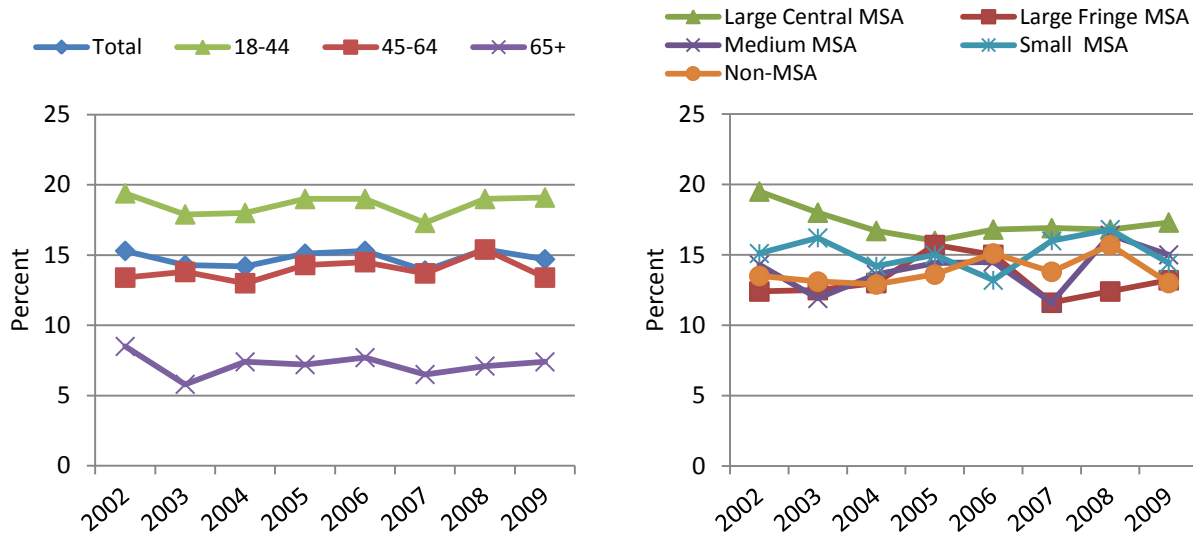
- Getting care for illness or injury as soon as wanted.
- ED wait times.
- Timeliness of cardiac reperfusion for heart attack patients.

Findings

Getting Care for Illness or Injury As Soon As Wanted

A patient's primary care provider should be the first point of contact for most illnesses and injuries. A patient's ability to receive timely treatment for illness and injury is a key element in a patient-centered health care system.

Figure 4.1. Adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by age and geographic location, 2002-2009



Key: MSA = metropolitan statistical area.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population age 18 and over.

Note: For this measure, lower rates are better.

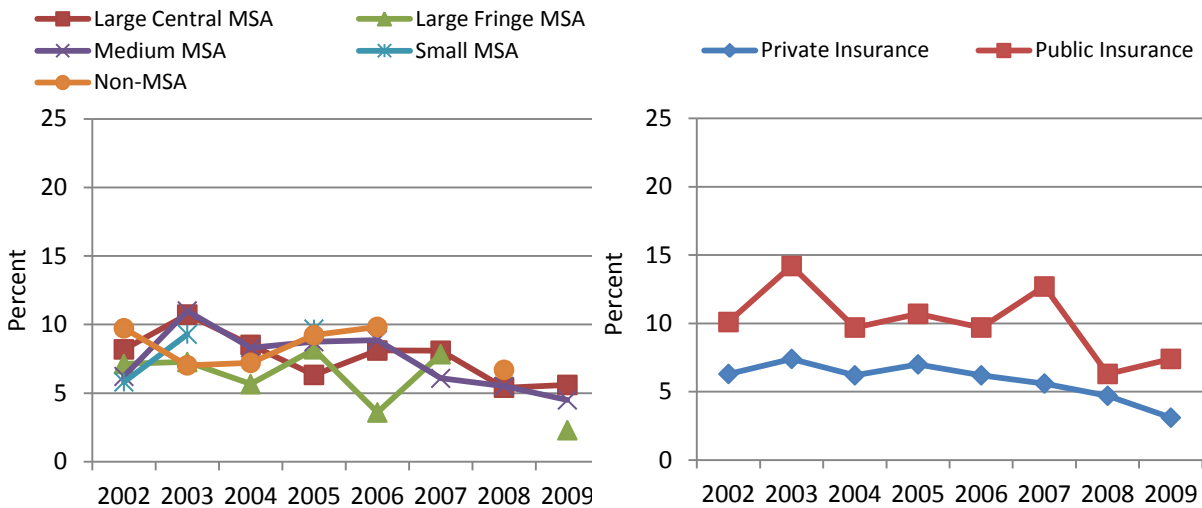
- From 2002 to 2009, the percentage of adults who did not receive care as soon as wanted was significantly higher for adults ages 18-44 compared with all other age groups (Figure 4.1).
- During this period, significant improvement was observed among residents of large central metropolitan areas.
- The percentage of adults who sometimes or never got care as soon as wanted was significantly lower for large fringe metropolitan areas than for large central metropolitan areas in 6 of 8 years.

Also, in the NHDR:

- In 7 of 8 years from 2002 to 2009, the percentage of adults who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted was significantly lower for Whites than for Blacks. In 6 of 8 years, the percentage was lower for Whites than for Asians.

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Figure 4.2. Children who needed care right away for an illness, injury, or condition in the last 12 months who sometimes or never got care as soon as wanted, by geographic location and insurance, 2002-2009



Key: MSA = metropolitan statistical area.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population under age 18.

Note: For this measure, lower rates are better. Data for some geographic areas in some years did not meet criteria for statistical reliability, data quality, or confidentiality.

- From 2002 to 2009, the percentage of children residing in large central metropolitan areas who needed care right away for an illness, injury, or condition in the last 12 months and sometimes or never got care as soon as wanted decreased (Figure 4.2).
- In 7 of 8 years, the percentage of children who needed care right away for an illness, injury, or condition in the last 12 months and sometimes or never got care as soon as wanted was significantly lower for children with private insurance than for children with public insurance.

Also, in the NHDR:

- In 5 of 8 years from 2002 to 2009, the percentage of children who did not receive care as soon as wanted was significantly lower for children from homes where English was the language spoken most often than for children from homes where a language other than English was spoken most often.

Emergency Department Visit Waiting Times

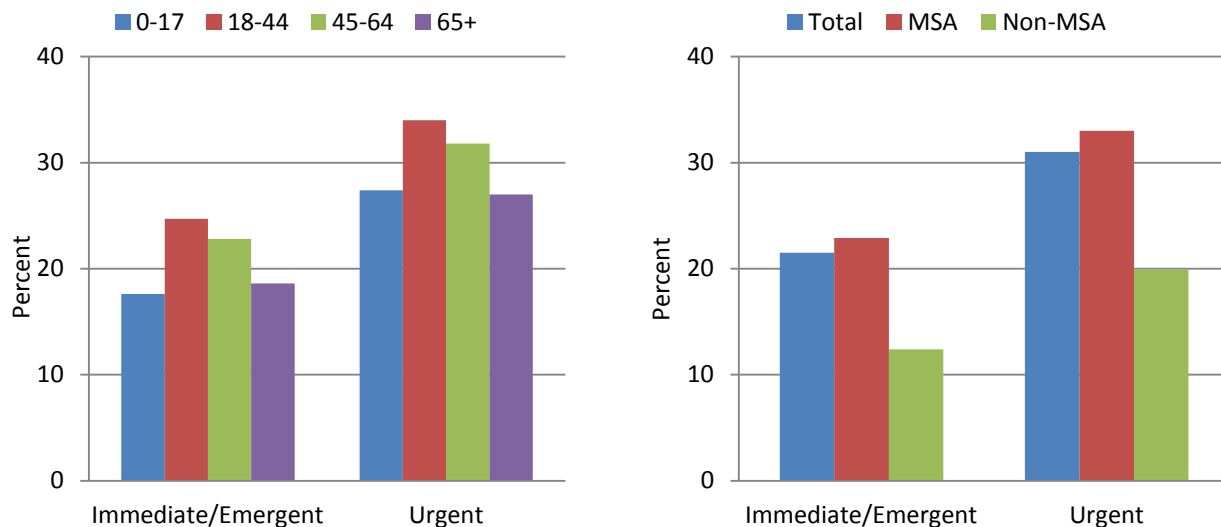
- In 2010, an estimated 130 million visits were made to hospital EDs compared with almost 124 million visits in 2008 (CDC, 2010).
- The median waiting time for patients to be seen by a physician during an ED visit in the United States was 28 minutes (CDC, 2010).
- Not all patients seeking care in an ED need urgent care, and use of EDs for nonurgent care could lead to longer waiting times.

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The National Hospital Ambulatory Medical Care Survey defines five levels of urgency of ED visits:

- Immediate, requiring immediate care.
- Emergent, requiring care in less than 15 minutes.
- Urgent, requiring care within 1 hour.
- Semiurgent, requiring care within 2 hours.
- Nonurgent, not requiring care within 2 hours.

Figure 4.3. Emergency department visits in which patient had to wait an hour or more, by urgency, age, and geographic location, 2009-2010



Key: MSA = metropolitan statistical area.

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey, 2009-2010.

Denominator (Immediate or Emergent): Visits to U.S. emergency department with triage assessment of immediate or emergent.

Denominator (Urgent): Visits to U.S. emergency department with triage assessment of urgent.

Note: For this measure, lower rates are better.

- In 2009-2010, among ED visits for both immediate/emergent and urgent conditions, the percentage of patients who had to wait an hour or more was significantly higher for those ages 18-44 than for those under age 18 and those age 65 and over (Figure 4.3).
- In 2009-2010, among ED visits for both immediate/emergent and urgent conditions, the percentage who had to wait an hour or more was lower among patients in nonmetropolitan areas compared with patients in metropolitan areas.

Also, in the NHDR:

- In 2009-2010, among ED visits for immediate/emergent conditions, the percentage of patients who had to wait an hour or more was higher for Blacks than for Whites. Also, a higher percentage of uninsured patients had to wait an hour or more compared with patients with private insurance.

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- Among visits for urgent conditions, the percentage of patients who had to wait an hour or more was higher for Blacks than for Whites and for uninsured patients than for privately insured patients.

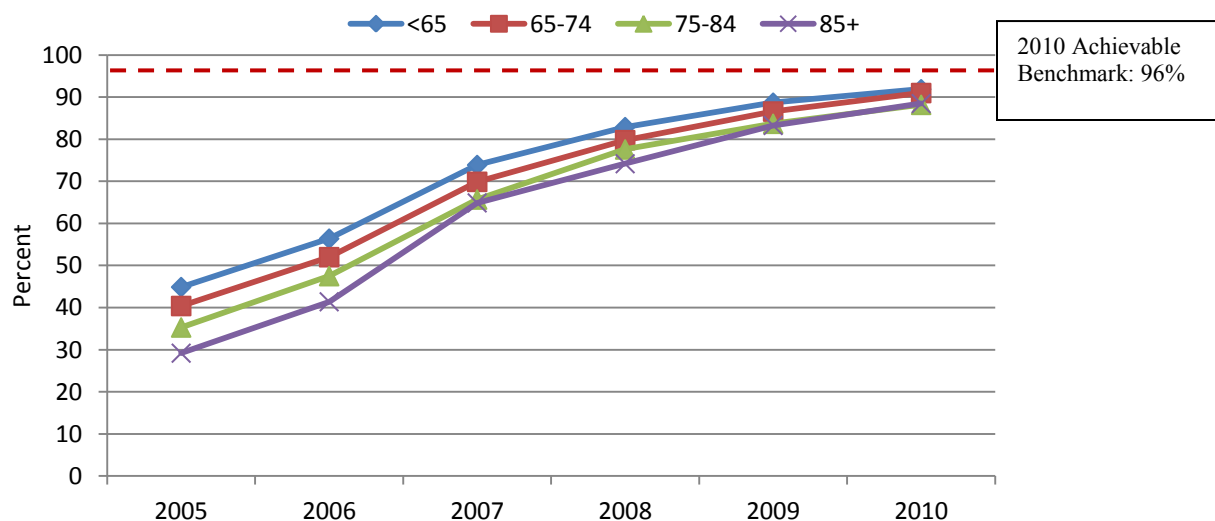
Timeliness of Cardiac Reperfusion for Heart Attack Patients

The capacity to treat hospital patients in a timely manner is especially important for emergency situations, such as heart attacks. Some heart attacks are caused by blood clots. Early actions, such as percutaneous coronary intervention (PCI) or fibrinolytic medication, may open blockages caused by blood clots, reduce heart muscle damage, and save lives (Gerczuk & Kloner, 2012). To be effective, these actions need to be performed quickly after the start of a heart attack.

In this report, we present two measures of timeliness of cardiac reperfusion:

- PCI within 90 minutes among appropriate patients.
- Fibrinolytic medication within 30 minutes among appropriate patients.

Figure 4.4. Hospital patients with heart attack who received percutaneous coronary intervention within 90 minutes, by age, 2005-2010



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2010.

Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction who were appropriate candidates for percutaneous coronary intervention.

- From 2005 to 2010, among heart attack patients, the percentage of patients receiving PCI within 90 minutes improved from 42.1% to 91.1% (data not shown).
- During this same period, the percentage of patients receiving PCI within 90 minutes improved significantly for all age groups (Figure 4.4). In 2005, a significantly higher percentage of patients under age 65 received PCI than patients in all other age groups; however, by 2010 there were no statistically significant differences by age in the percentage of patients who received PCI.
- The benchmark for this measure was changed because, overall, the 2008 benchmark had been achieved.

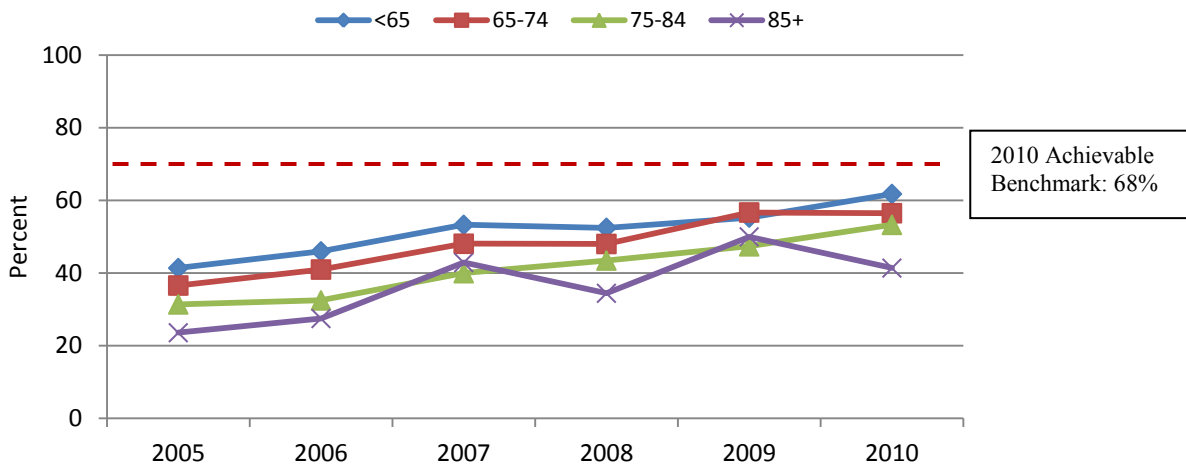
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- The 2010 top 5 State achievable benchmark was 96%.ⁱ At the current rates of improvement, the achievable benchmark could be attained overall and among all age groups in less than 1 year.

Also, in the NHDR:

- Among heart attack patients, the percentage of patients receiving timely PCI improved for all racial/ethnic groups from 2005 to 2010. In all years, Blacks and Hispanics were less likely than Whites to receive timely PCI.

Figure 4.5. Hospital patients with heart attack who received fibrinolytic medication within 30 minutes, by age, 2005-2010



Source: Centers for Medicare & Medicaid Services, Medicare Quality Improvement Organization Program, 2005-2010.

Denominator: Patients hospitalized with a principal diagnosis of acute myocardial infarction who were appropriate candidates for fibrinolytic medication.

- From 2005 to 2010, the percentage of heart attack patients receiving fibrinolytic medication within 30 minutes improved from 38% to 58% (data not shown).
- The percentage of patients who received fibrinolytic medication was significantly higher for patients under age 65 than for patients ages 75-84 in 4 of 6 years and significantly higher than for patients age 85 and over in 5 of 6 years (Figure 4.5).
- The benchmark for this measure was changed because, overall, the 2008 benchmark had been achieved.
- In 2010, the top 5 State achievable benchmark was 68%.ⁱⁱ At the current rate of improvement, the achievable benchmark could be attained overall in less than a year (data not shown).
- Heart attack patients under age 65 should reach the achievable benchmark in 1.5 years, ages 65-74 in 2.5 years, ages 75-84 in just over 3 years, and age 85 and over in 6 years.

ⁱ The top 5 States that contributed to the achievable benchmark are Maine, Minnesota, North Carolina, Rhode Island, and South Carolina.

ⁱⁱ The top 5 States that contributed to the achievable benchmark are Arkansas, California, Georgia, Mississippi, and Texas.

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Males should reach the benchmark in about 1.5 years and females in about 4 years (data not shown).

Also, in the NHDR:

- At their current rates of improvement, Whites and Asians should reach the achievable benchmark in about 1 year; Blacks should reach the benchmark in about 3 years, and Hispanics should reach the benchmark in about 7 years.

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Chapter 5. Patient Centeredness

The Institute of Medicine identifies patient centeredness as a core component of quality health care (IOM, 2001a). Patient centeredness is defined as:

[H]ealth care that establishes a partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patients' wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care (IOM, 2001b).

Patient centeredness “encompasses qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient” (IOM, 2001a). In addition, translation and interpretation services facilitate communication between the provider and the patient and are often a legal requirement.ⁱ The patient-centered approach includes viewing the patient as a unique person, rather than focusing strictly on the illness, building a therapeutic alliance based on the patient's and the provider's perspectives.

Patient-centered care is supported by good provider-patient communication so that patients' needs and wants are understood and addressed and patients understand and participate in their own care (IOM, 2001b). This approach to care has been shown to improve patients' health and health care (DiMatteo, 1998; Stewart, et al., 2000; Little, et al., 2001; Anderson, 2002; Beck, et al., 2002). Unfortunately, many barriers exist to good communication.

Providers also differ in communication proficiency, including varied listening skills and different views from their patients of symptoms and treatment effectiveness (Rhoades, et al., 2001). Additional factors influencing patient centeredness and provider-patient communication include:

- Language barriers.
- Racial and ethnic concordance between the patient and provider.
- Effects of disabilities on patients' health care experiences.
- Providers' cultural competency.

Efforts to remove these possible impediments to patient centeredness are underway within the Department of Health and Human Services (HHS). For example, the Office of Minority Health has developed a set of Cultural Competency Curriculum Modules that aim to equip providers with cultural and linguistic competencies to help promote patient-centered care (HHS, 2011).ⁱⁱ These modules are based on the National Standards on Culturally and Linguistically Appropriate Services. The standards are directed at health care organizations and aim to improve patient centeredness of care for people with limited English proficiency (LEP). Another example, which is administered by the Health Resources and Services Administration, is *Effective*

ⁱ For example, Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d, may require the practitioner or hospital to provide language interpreters and translate vital documents for limited-English-proficient persons. Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794, may require the practitioner or hospital to provide sign language interpreters, materials in Braille, and/or accessible electronic formats for individuals with disabilities.

ⁱⁱ This free, online educational program (available at www.thinkculturalhealth.hhs.gov) is accredited for Continuing Medical Education credits for physicians, as well as Continuing Education Units for physician assistants, nurse practitioners, registered nurses, social workers, and emergency response personnel.

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Communication Tools for Healthcare Professionals, a Web-based course for providers that integrates concepts related to health literacy with cultural competency and LEP.ⁱⁱⁱ

Similarly, the HHS Office for Civil Rights (OCR), in partnership with 18 medical schools in the National Consortium for Multicultural Education, funded by the National Institutes of Health, provides a course on cultural competency in medicine. The course, *Stopping Discrimination Before It Starts: The Impact of Civil Rights Laws on Health Care Disparities*,^{iv} focuses on Title VI compliance. This course discusses, in part, the HHS OCR's Guidance to Federal Financial Assistance Recipients Regarding Title VI Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons. This guidance explains that recipients of Federal financial assistance must take reasonable steps to give individuals with LEP a meaningful opportunity to participate in HHS-funded programs. Failure to do so may violate the prohibition under Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d *et seq.*, against national origin discrimination (HHS, 2003).

In addition, the HHS OCR is responsible for the enforcement of Section 1557 of the Affordable Care Act, 42 U.S.C. 18116. This section provides that an individual shall not be excluded from participation in, be denied the benefits of, or be subjected to discrimination on the grounds prohibited under Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d *et seq.* (race, color, national origin); Title IX of the Education Amendments of 1972, 20 U.S.C. 1681 *et seq.* (sex); the Age Discrimination Act of 1975, 42 U.S.C. 6101 *et seq.* (age); or Section 504 of the Rehabilitation Act of 1973, 29 U.S.C. 794 (disability), under any health program or activity, any part of which is receiving Federal financial assistance, or under any program or activity that is administered by an executive agency or any entity established under Title I of the Affordable Care Act or its amendments.

On February, 26, 2013, the Department published its 2013 Language Access Plan (2013 HHS LAP; HHS, 2013), ensuring access to HHS programs and activities for people with LEP. The covered programs and activities include, but are not limited to, Medicare, Medicaid, and the Children's Health Insurance Program. The 2013 HHS LAP was developed by the HHS Language Access Steering Committee, which is led by the Director of the OCR on behalf of the Secretary.

In accordance with Executive Order 13166, *Improving Access to Services for Persons With Limited English Proficiency* (White House, 2000), the 2013 HHS LAP establishes the Department's policy and strategy for serving individuals with LEP and reaffirms the Department's commitment to language access principles. The 2013 HHS LAP serves as a blueprint for HHS staff and operating divisions charged with developing their own agency-specific language access plans. Additional information regarding language access requirements is available from the Department of Justice (DOJ, 2011).

ⁱⁱⁱ This online program (available at www.hrsa.gov/publichealth/healthliteracy/) is accredited for Continuing Medical Education credits for physicians and Continuing Education Units for nurses, physician assistants, pharmacists, and Certified Health Education Specialists.

^{iv} This course (available in the Association of American Medical Colleges' MedEdPORTAL, <https://www.mededportal.org/publication/7740>) has been presented at five national medical schools. Emory University School of Medicine and the University of Colorado School of Medicine have incorporated this course into their fourth year curriculums.

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The 2013 HHS LAP is organized into 10 cross-cutting elements:

1. Assessment – Needs and Capacity;
2. Oral Language Assistance Services;
3. Written Translations;
4. Policies and Procedures;
5. Notification of the Availability of Language Assistance at No Cost;
6. Staff Training;
7. Assessment – Access and Quality;
8. Stakeholder Consultation;
9. Digital Information; and
10. Grant Assurance and Compliance.

Importance

Morbidity and Mortality

- Patient-centered approaches to care have been shown to improve patients' health status. These approaches rely on building a provider-patient relationship, improving communication, fostering a positive atmosphere, and encouraging patients to actively participate in provider-patient interactions (Stewart, et al., 2000; Anderson, 2002).
- A patient-centered approach has been shown to lessen patients' symptom burden (Little, et al., 2001).
- Patient-centered care encourages patients to comply with treatment regimens (Beck, et al., 2002).
- Patient-centered care can reduce the chance of misdiagnosis due to poor communication (DiMatteo, 1998).

Cost

- Patient centeredness has been shown to reduce underuse and overuse of medical care (Berry, et al., 2003).
- Patient centeredness can reduce the strain on system resources and save money by reducing the number of diagnostic tests and referrals (Little, et al., 2001).
- Although some studies have shown that being patient centered reduces medical costs and use of health service resources, others have shown that patient centeredness increases providers' costs, especially in the short run (Bechel, et al., 2000).

Measures

The *National Healthcare Quality Report* (NHQR) and the *National Healthcare Disparities Report* (NHDR) track several measures of patients' experience of care. The reports also address the priority of ensuring that each person and family is engaged as partners in their care, found in the *National Strategy for Quality Improvement in Health Care* (National Quality Strategy).^v The rationale is that “[h]ealth care should give each individual patient and family an active role in their care. Care should adapt readily to individual and family circumstances, as well as differing

^v Available at www.healthcare.gov/center/reports/nationalqualitystrategy032011.pdf.

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cultures, languages, disabilities, health literacy levels, and social backgrounds.” Examples of person-centered care could be ensuring that patients’ feedback on their preferences, desired outcomes, and experiences of care is integrated into care delivery and enabling patients to effectively manage their care.

The NHQR has tracked a growing number of patient centeredness measures. Organized around the National Quality Strategy, the 2012 NHQR presents the following measures that relate to the goal to provide patient-centered care:

- Adults and children who reported poor communication at the doctor’s office (composite).
- Adults who reported poor communication with nurses and doctors at the hospital.
- Provider’s involvement of the patient in making treatment decisions.

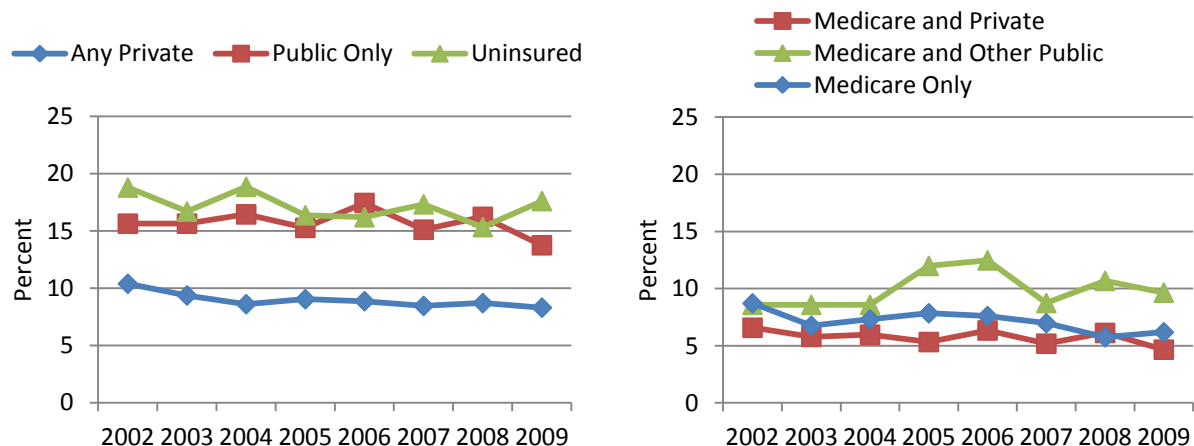
The last measure also relates to the National Quality Strategy goal of patient engagement.

Findings

Patients’ Experience of Care—Adults

Optimal health care requires good communication between patients and providers, yet barriers to provider-patient communication are common. To provide all patients with the best possible care, providers need to understand patients’ diverse health care needs and preferences and communicate clearly with patients about their care.

Figure 5.1. Composite: Adults who had a doctor’s office or clinic visit in the last 12 months who reported poor communication with health providers, by insurance, ages 18-64 and age 65 and over, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population age 18 and over who had a doctor’s office or clinic visit in the last 12 months.

Note: For this measure, lower rates are better. Patients who report that their health providers *sometimes* or *never* listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- From 2002 to 2009, there were no statistically significant changes in the percentage of adults with any private insurance, public insurance, or no insurance who had a doctor’s office or clinic visit and reported poor communication (Figure 5.1).

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- From 2002 through 2009, a significantly lower percentage of adults with private insurance reported poor communication with their health providers compared with adults who were uninsured and those with public insurance (in 2009, 8.3% compared with 17.6% and 13.7%, respectively).
- In 2009, the percentage of people reporting poor communication with their health providers was significantly higher for those with Medicare and other public insurance than for those with Medicare only or Medicare and private insurance (9.6% compared with 6.2% and 4.7%, respectively).

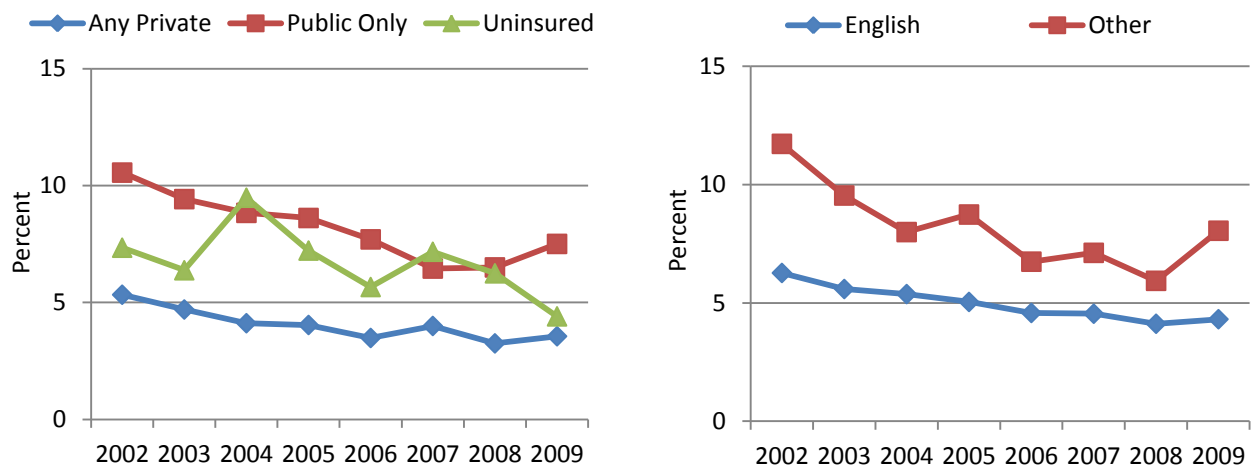
Also, in the NHDR:

- From 2002 to 2009, poor and low-income adults were more likely than high-income adults to report poor communication with health providers.

Patients' Experience of Care—Children

Communication in children's health care can be challenging since the child's experiences are interpreted through the eyes of a parent or guardian. During a health care encounter, a responsible adult caregiver will be involved in communicating with the provider and interpreting decisions to the patient in an age-appropriate manner. Optimal communication in children's health care can therefore have a significant impact on receipt of high-quality care and subsequent health status.

Figure 5.2. Composite: Children who had a doctor's office or clinic visit in the last 12 months whose parents reported poor communication with health providers, by insurance and primary language, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population under age 18 who had a doctor's office or clinic visit in the last 12 months.

Note: For this measure, lower rates are better. Parents who report that their child's health provider *sometimes* or *never* listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- From 2002 to 2009, the percentage of children whose parents reported poor communication significantly decreased for all insurance groups (Figure 5.2). During the same period, the percentage significantly decreased for both primary language groups as well.

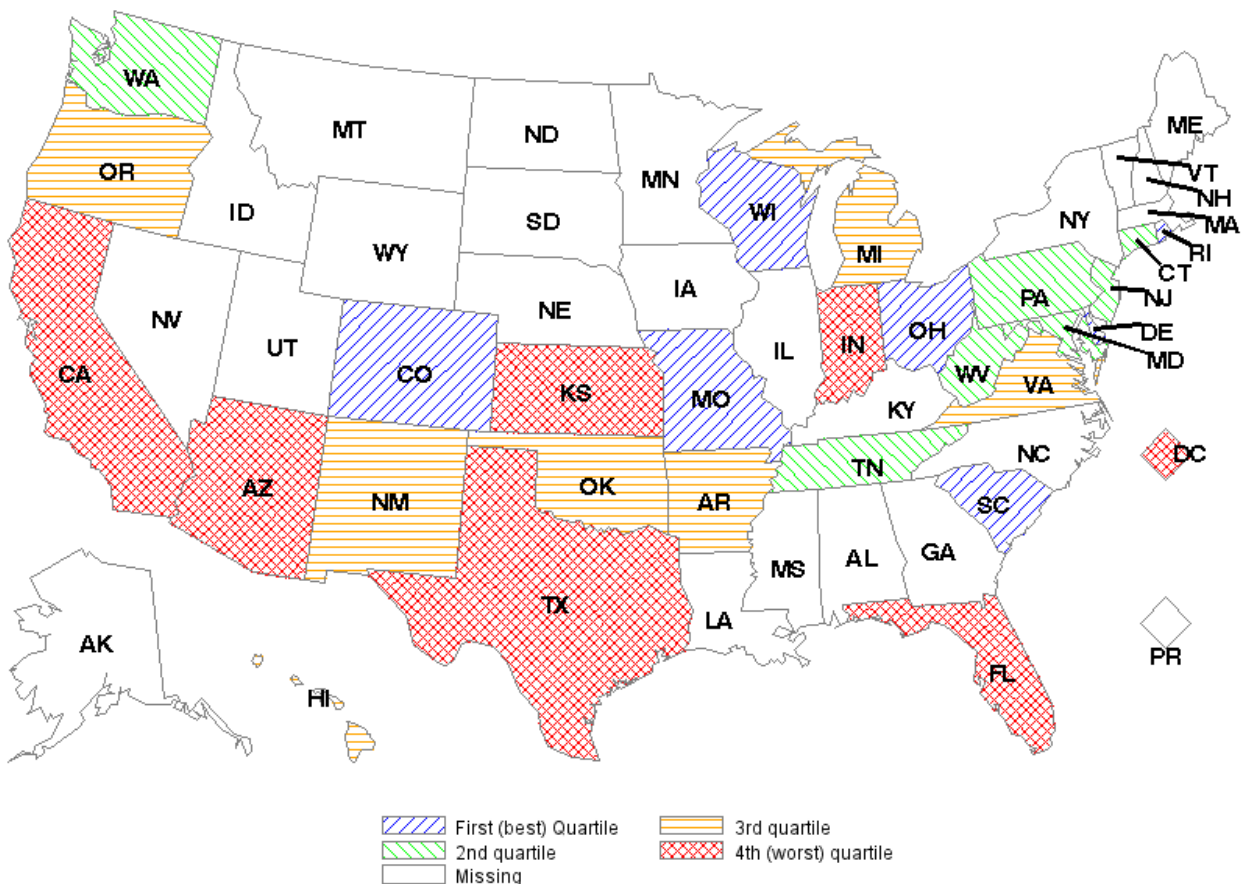
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- In 2009, the percentage of children whose parents reported poor communication was higher for those with public insurance only than for those with any private insurance.
- In 2009, the percentage of children whose parents reported poor communication with health providers was higher for those whose preferred language was something other than English compared with those whose preferred language was English.

Also, in the NHDR:

- From 2002 to 2009, the percentage of children whose parents or guardians reported poor communication significantly decreased among Hispanics.

Figure 5.3. State variation: Children whose parents reported poor communication with health providers



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2009.

Denominator: Civilian noninstitutionalized population under age 18 who had a doctor's office or clinic visit in the last 12 months.

Note: Parents who report that their child's health providers *sometimes* or *never* listened carefully, explained things clearly, showed respect for what they had to say, or spent enough time with them are considered to have poor communication.

- Although data were not available for all States (only available for 28 States), there was significant variation across the Nation in the percentage of children whose parents reported poor communication with health providers (Figure 5.3).

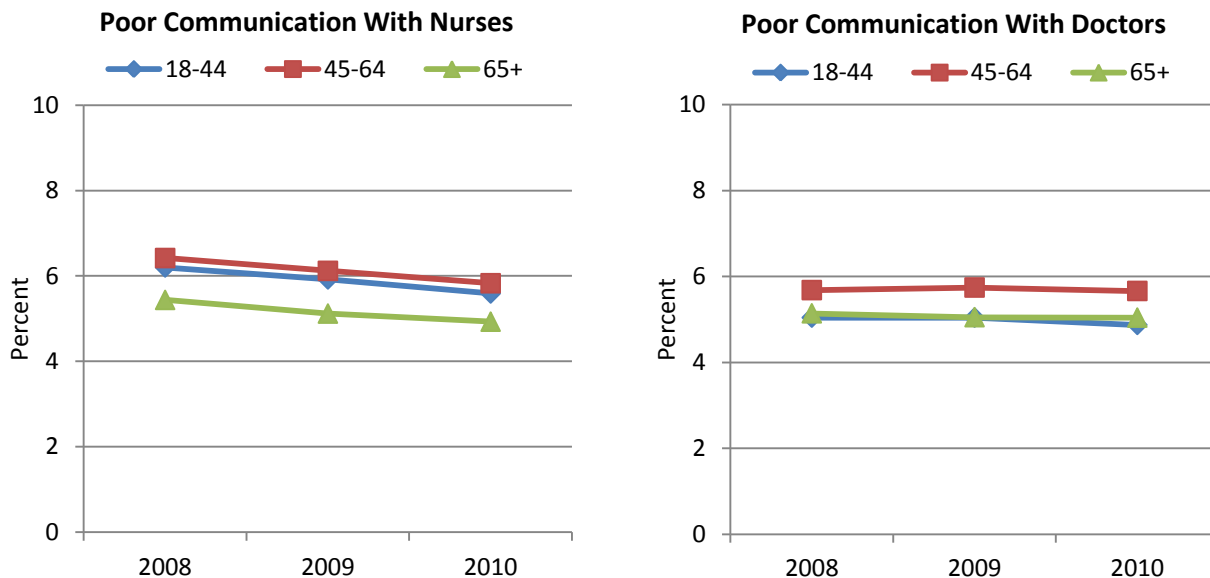
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- The ranges for the quartiles are:
 - First (best) quartile: 4.6%-7.2%
 - Second quartile: 7.3%-8.19%
 - Third quartile: 8.2%-8.9%
 - Fourth (worst) quartile: 9%-16%

Patients' Experience of Care—Hospital

Using methods developed for the CAHPS® (Consumer Assessment of Healthcare Providers and Systems) survey (Hargraves, et al., 2003), the NHQR and NHDR use a composite measure that combines three measures of provider-patient communication into a single core measure. The composite measure presented includes data on providers who sometimes or never listened carefully, explained things clearly, and respected what patients had to say. These data are presented separately for communication with nurses and communication with doctors.

Figure 5.4. Adult hospital patients who reported poor communication with nurses and doctors, by age, 2008-2010



Source: Agency for Healthcare Research and Quality, Hospital CAHPS (Consumer Assessment of Healthcare Providers and Systems) Survey, 2008-2010.

Denominator: Adult hospitalized patients.

Note: For this measure, lower rates are better. Poor communication is defined as responded *sometimes* or *never* to the set of survey questions: "During this hospital stay, how often did doctors/nurses treat you with courtesy and respect?" "During this hospital stay, how often did doctors/nurses listen carefully to you?" and "During this hospital stay, how often did doctors/nurses explain things in a way you could understand?"

- In 2010, 5.3% of adult hospital patients reported poor communication with doctors during their hospital stay, and 5.2% reported poor communication with nurses (data not shown).
- In 2010, patients age 65 and over were less likely to report poor communication with nurses compared with patients ages 18-44 (4.9% compared with 5.6%).
- In the same year, patients ages 45-64 were more likely to report poor communication with doctors compared with patients ages 18-44 (5.7% compared with 4.9%).

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Also, in the NHDR:

- In 2010, all minority groups were more likely than Whites to report poor communication with nurses.
- Blacks, American Indians and Alaska Natives, and patients of more than one race were more likely than Whites to report poor communication with doctors.

Patient and Family Engagement: Enabling Effective Patient Navigation and Management of Care

To effectively navigate the complicated health care system, health care providers need to give patients access to culturally and linguistically appropriate tools to support patient engagement. Culturally and linguistically appropriate services (CLAS) are important components of effective health care delivery. It is vital for providers to understand patients' health care needs and for patients to understand providers' diagnoses and treatment recommendations. Communication barriers can relate to language, culture, and health literacy.

Health literacy is the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions (HHS, 2000). Patients with limited health literacy are more likely to have difficulty understanding instructions and taking medication properly. In addition, communication barriers such as limited English proficiency are associated with lower quality of care and place patients at risk for poor clinical outcomes (Ngo-Metzger, et al., 2007).

About one-third of Americans are not "health literate" (Gazmararian, et al. 2003; Parker, et al., 2003). Individuals with inadequate health literacy incur higher medical costs and are more likely to have an inefficient mix of service use compared with those with adequate health literacy (Howard, et al., 2005). They may experience many difficulties, including:

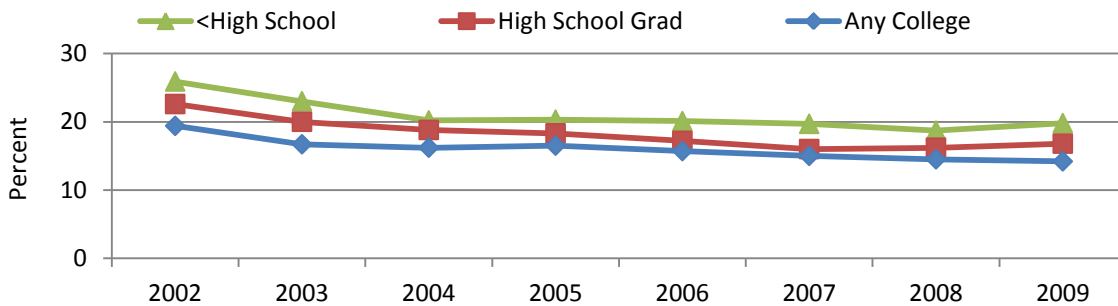
- Less frequent preventive care (Scott, et al., 2002).
- Poorer understanding of their conditions and care (Williams, Baker, Honig, et al., 1998; Williams, Baker, Parker, et al., 1998; Gazmararian, et al., 2003).
- Higher use of emergency and inpatient services and higher rates of rehospitalization (Baker, et al., 1998; Baker, et al., 2002).
- Lower adherence to medication schedules (Baker, et al., 1998).
- Less participation in medical decisionmaking (Berkman, et al., 2004).

Providers Asking Patients To Assist in Making Treatment Decisions

The increasing prevalence of chronic diseases has placed more responsibility on patients, since conditions such as diabetes and hypertension require self-management. Patients need to be provided with information that allows them to make educated decisions and feel engaged in their treatment. Treatment plans also need to incorporate their values and preferences.

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Figure 5.5. Adults with a usual source of care whose health providers sometimes or never asked for the patient's help to make treatment decisions, by education, 2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2009.

Denominator: Civilian noninstitutionalized population with a usual source of care.

Note: For this measure, lower rates are better.

- In 2009, patients with a high school education and less than a high school education were significantly more likely than patients with any college education to have a usual source of care who did not ask for their help in making treatment decisions (16.8% and 19.8%, respectively, compared with 14.2%; Figure 5.5).
- From 2002 to 2009, the percentage of patients whose usual source of care did not ask for their help in making treatment decisions decreased for the total population and all education groups (total population from 21.9% to 15.4%; data not shown).

Also, in the NHDR:

- In 2009, Black and Hispanic patients were significantly more likely than White patients to have a usual source of care who did not ask for their help in making treatment decisions.

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Chapter 6. Care Coordination

Health care in the United States is often fragmented. Clinical services are frequently organized around small groups of providers who function autonomously and specialize in specific symptoms or organ systems. Therefore, many patients receive attention only for individual health conditions rather than receiving coordinated care for their overall health. For example, the typical Medicare beneficiary sees two primary care providers and five specialists each year (Bodenheimer, 2008). Communication of important information among providers and between providers and patients may entail delays or inaccuracies or fail to occur at all.

Care coordination is a conscious effort to ensure that all key information needed to make clinical decisions is available to patients and providers. It is defined as the deliberate organization of patient care activities between two or more participants involved in a patient's care to facilitate appropriate delivery of health care services (Shojania, et al., 2007). Care coordination is multidimensional and essential to preventing adverse events, ensuring efficiency, and making care patient centered (Powell-Davies, et al., 2008).

Patients in greatest need of care coordination include those with multiple chronic medical conditions, concurrent care from several health professionals, many medications, extensive diagnostic workups, or transitions from one care setting to another. Effective care coordination requires well-defined multidisciplinary teamwork based on the principle that all who interact with a patient must work together to ensure the delivery of safe, high-quality care.

In early 2011, the Partnership for Patients was created to improve the quality, safety, and affordability of health care for all Americans. One of the two major goals of this public-private partnership is to heal patients without complications arising. This goal specifically ties to care coordination by seeking to decrease preventable complications during transitions from one care setting to another. The objective is to decrease all hospital readmissions by 20% overall by the end of 2013 (compared with 2010).

One example of the Federal Government's efforts to support care coordination is the Health Resources and Services Administration's initiative "Enhancement & Evaluation of Existing Health Information Electronic Network Systems for PLWHA (People Living With HIV/AIDS) in Underserved Communities." Begun in 2007, the initiative funded six demonstration sites throughout the Nation for up to 4 years.ⁱ

Another more recent funding opportunity also offered by HRSA is "Systems Linkages and Care Initiative to High Risk Populations Evaluation and Technical Assistance Center." This initiative promotes the development of innovative strategies to successfully integrate different components of the public health system into quality HIV care of hard-to-reach populations who have never been in care.

The Agency for Healthcare Research and Quality (AHRQ) intends this chapter to be the leading step in the evolving national discussion on measuring care coordination. Furthermore, AHRQ

ⁱ For more information, see <http://hab.hrsa.gov/about/special/underservedcommunities.html>.

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hopes that this chapter will stimulate productive discussions in the area of care coordination, including development and use of valid, reliable, and feasible quality measures.

Importance

Morbidity and Mortality

- Care coordination interventions have been shown to:
 - Reduce mortality among patients with heart failure.
 - Reduce mortality and dependency among patients with stroke.
 - Reduce symptoms among patients with depression and at the end of life.
 - Improve glycemic control among patients with diabetes (Shojania, et al., 2007).

Cost

- Care coordination interventions have been shown to:
 - Reduce hospitalizations among patients with heart failure.
 - Reduce readmissions among patients with mental health conditions.
 - Be cost-effective when applied to treatment of depression (Shojania, et al., 2007).

Measures

The *National Strategy for Quality Improvement in Health Care*ⁱⁱ identified care coordination as one of six national priorities for health care. The vision is health care providers, patients, and caregivers all working together to “ensure that the patient gets the care and support he needs and wants, when and how he needs and wants it.” While measurement of care coordination is at an early stage in development, key goals include coordinating transitions of care, reducing hospital readmissions, communicating medication information, and reducing preventable emergency department visits.

Measures reported in this chapter are organized around these goals:

- Transitions of care:
 - Adequate hospital discharge information.
- Readmissions:
 - State variation: Readmissions for congestive heart failure.
- Integration of information:
 - Provider asking about medications from other doctors.
 - Electronic exchange of medication information.

ⁱⁱ Available at: <http://www.healthcare.gov/center/reports/quality03212011a.html>.

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- Children with special health care needs (CSHCN):
 - CSHCN with effective care coordination.
 - CSHCN with a medical home.

Findings

Transitions of Care

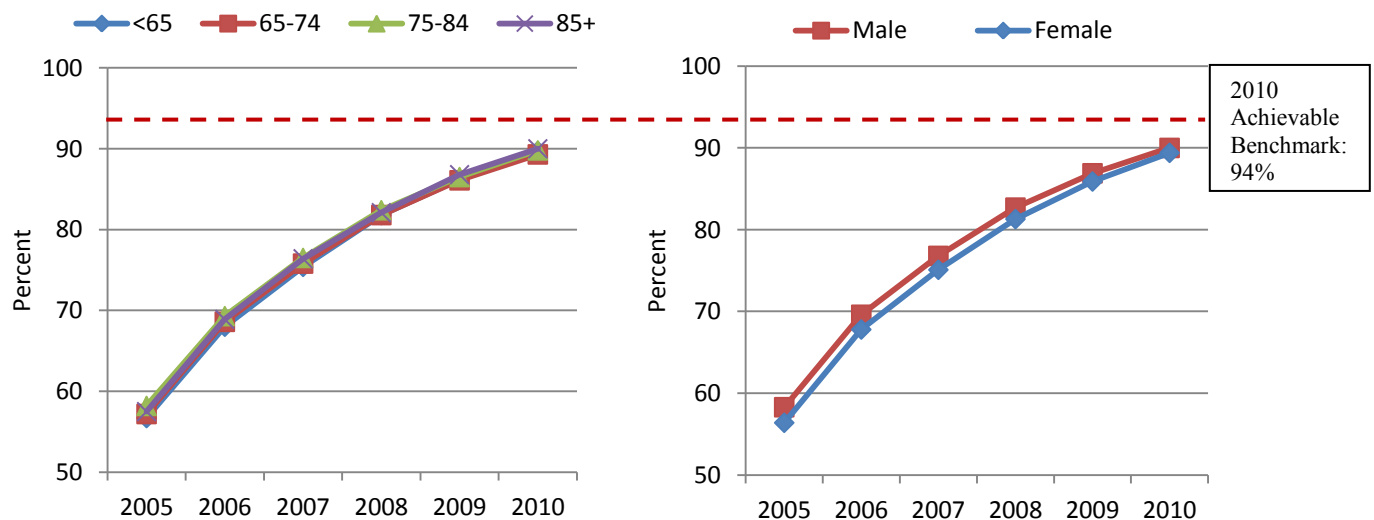
As health care conditions and needs change, patients often need to move from one setting to another. These transitions of care place patients at heightened risk of adverse events. Important information may be lost or miscommunicated as responsibility is delivered to new parties.

Management: Complete Written Discharge Instructions

Effective care coordination begins with ensuring that accurate clinical information is available to support medical decisions by patients and providers. A common transition of care is discharge from the hospital. Giving patients and caregivers self-management support after discharge has been shown to reduce readmissions to the hospital and lower costs (Coleman, et al., 2006).

Discharge from a hospital typically indicates improvement in a patient's condition so that the patient no longer requires inpatient care. It also means that the patient and family must resume responsibility for the patient's daily activities, diet, medications, and other treatments. The patient also needs to visit his or her personal doctor and know what to do if his or her condition deteriorates. Written discharge instructions are critical to help ensure that a patient receives the information needed to stay healthy after leaving the hospital.

Figure 6.1. Hospitalized adult patients with heart failure who were given complete written discharge instructions, by age and gender, 2005-2010



Source: Centers for Medicare & Medicaid Services, Quality Improvement Organization Program, 2005-2010.

Denominator: Hospitalized adult patients with a principal discharge diagnosis of heart failure.

Note: Complete written discharge instructions needed to address all of the following: activity level, diet, discharge medications, followup appointment, weight monitoring, and actions to take if symptoms worsen.

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- From 2005 to 2010, the percentage of hospitalized adult patients with heart failure who were given complete written discharge instructions improved from 57.4% to 89.7% (data not shown).
- Improvements were observed among all age and gender groups (Figure 6.1).
- Statistically significant differences by age and gender were not observed.
- The 2010 top 5 State achievable benchmark was 94%.ⁱⁱⁱ At the current 6% annual rate of increase, this benchmark could be attained overall and by all age and gender groups in less than a year.

Also, in the NHDR:

- Improvements were observed among all racial and ethnic groups.

Hospital Readmissions

State Variation: Readmissions for Congestive Heart Failure

After discharge from the hospital for a chronic condition such as congestive heart failure (CHF), many patients will be rehospitalized. Rehospitalization signals a worsened state of illness and may reflect care that is not optimally coordinated. Rehospitalization also has significant cost implications since it is much more resource intensive than outpatient treatment.

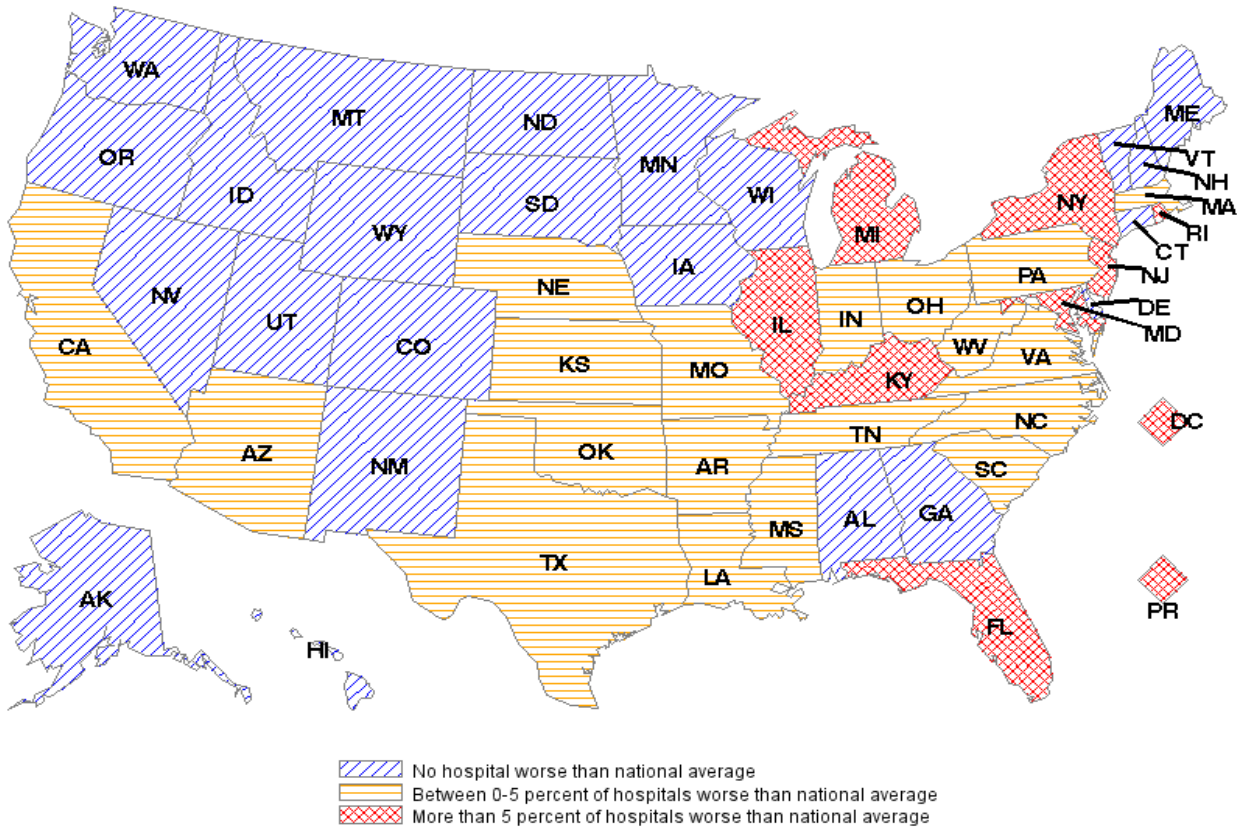
Although not all rehospitalizations for CHF can be prevented, the risk of rehospitalization may increase when patients do not follow their discharge instructions. After discharge, patients need to take their medications regularly, adhere to recommendations related to diet and activity, monitor their weight, and look for signs and symptoms that their CHF is not under good control.

When patients do not receive written discharge instructions that they understand, they may be less able to follow them. In addition, postdischarge care should be coordinated with the patient's primary care physician. Patients will need to arrange followup visits with their primary care physician, who can adjust medications early to help prevent rehospitalization.

ⁱⁱⁱ The top 5 States that contributed to the achievable benchmark are Colorado, Delaware, New Hampshire, New Jersey, and Utah.

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Figure 6.2. State variation: Readmissions for congestive heart failure, by comparison to the national average, 2008-2010



Source: Centers for Medicare & Medicaid Services, HospitalCompare, 2008-2010, accessed July 25, 2012.

Note: National average=25%. Calculation of the 30-day readmission rates are adjusted for patient characteristics, including the patient's age, gender, past medical history, and other diseases or conditions (comorbidities).

- With the exception of several States, the eastern United States had higher percentages of hospitals with readmission rates worse than the national average (25%; Figure 6.2).
- The central United States had moderate percentages of hospitals with readmission rates worse than the national average.
- The north central and northwestern States were more likely to have no hospitals with readmission rates worse than the national average.

Integration of Information

Patients often seek care from many providers. Medical information generated in different settings may not be sent to a patient's primary care provider. Actively gathering and managing all of a patient's medical information is an important part of care coordination. Tasks include ensuring that patients are informed of important findings such as test results, primary care doctors are informed of care from specialists, and providers within a practice have access to needed information.

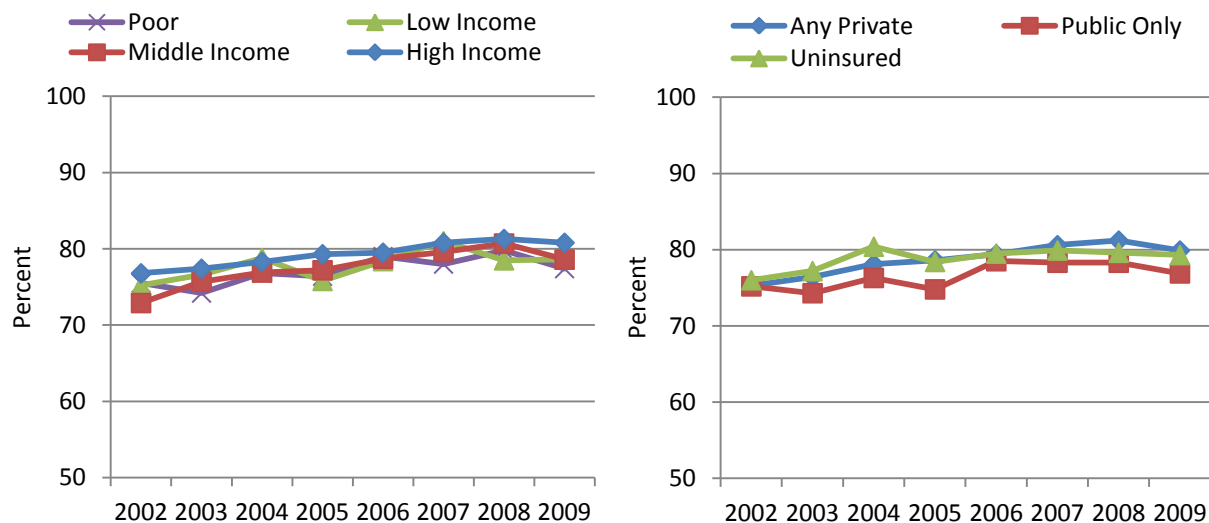
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Management: Provider Asking About Medications From Other Doctors

Different providers may prescribe medications for the same patient. Patients are responsible for keeping track of all their medications, but medication information can be confusing, especially for patients on multiple medications. When care is not well coordinated and some providers do not know about all of a patient's medications, patients are at greater risk for adverse events related to drug interactions, overdosing, or underdosing. In addition, providers need to periodically review all of a patient's medications to ensure that they are taking what is needed and only what is needed. Medication reconciliation has been shown to reduce both medication errors and adverse drug events (Whittington & Cohen, 2004).

Medication information generated in different settings may not be sent to a patient's primary care provider. In the absence of communication from other providers, the patient is the primary source of medication information. Actively gathering and managing all of a patient's medical information is an important part of care coordination.

Figure 6.3. People with a usual source of care whose health provider usually asks about prescription medications and treatments from other doctors, by family income and insurance (adults under age 65), United States, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population who report a usual source of care.

- From 2002 to 2009, the percentage of people with a usual source of care whose health provider usually asked about prescription medications and treatments from other doctors improved from 75.1% to 79.3% (data not shown).
- In 2009, there were no statistically significant differences by family income or insurance (Figure 6.3).

Also, in the NHDR:

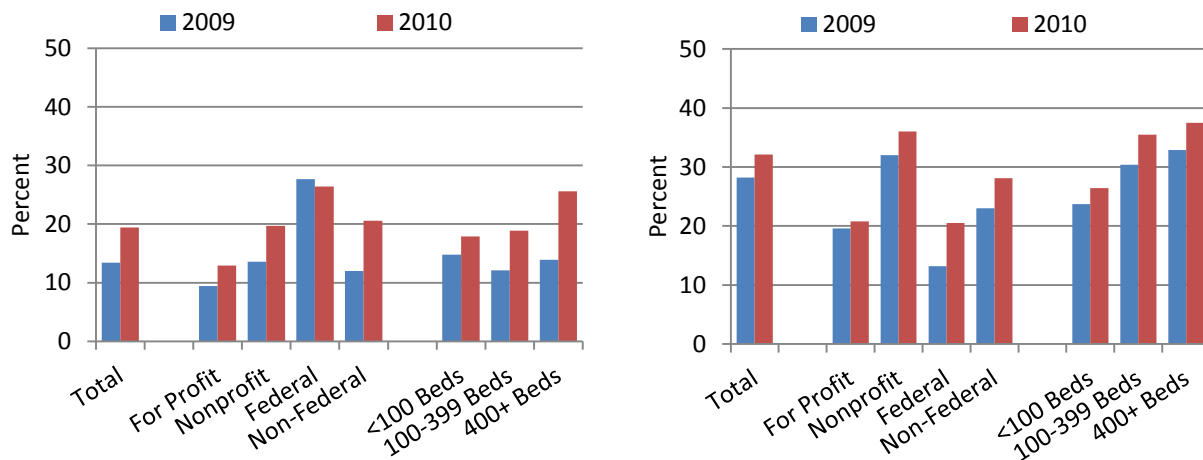
- In 2009, there were no statistically significant differences by education or perceived health status.

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Structure: Electronic Exchange of Medication Information

Ideally, information about medications prescribed for a patient by one provider would be available to all providers taking care of that patient. One way to exchange this information efficiently is to build this function into health information technologies. The American Hospital Association recently surveyed hospitals about their use of health information technologies. Questions about whether a hospital electronically exchanged patient information on medication history with other providers were included, and 2,112 hospitals responded.

Figure 6.4. Hospitals with electronic exchange of patient information on medication history, by ownership and bed size, 2009 and 2010, electronic exchange with hospitals outside their system (left) and electronic exchange with ambulatory providers outside their system (right)



Source: American Hospital Association Annual Survey Information Technology Supplement, 2009 and 2010.

- In 2010, 19.4% of hospitals electronically exchanged patient information on medication history with hospitals outside their system, up from 13.4% in 2009. Also, 32.1% of hospitals exchanged information with ambulatory providers outside their system, up from 28.2% in 2009 (Figure 6.4).
- Federal hospitals were most likely to have electronic exchange with hospitals outside their system, followed by non-Federal, nonprofit, and for profit (investor owned) (26.4%, 20.6%, 19.7%, and 12.9%, respectively).
- Hospitals with <100 or 100-399 beds were less likely than large hospitals (400+ beds) to exchange information with hospitals outside their system. Large hospitals also were more likely than medium and small hospitals (37.5%, 35.5%, and 26.4%, respectively) to have electronic exchange with ambulatory providers outside their system.
- In 2010, nonprofit hospitals were most likely to have electronic exchange with ambulatory providers outside their system, followed by non-Federal, for profit, and Federal.

Also, in the NHDR:

- In 2010, hospitals in the West were the most likely to exchange information with ambulatory providers outside their system, followed by hospitals in the Northeast, South, and Midwest.

New

Children With Special Health Care Needs

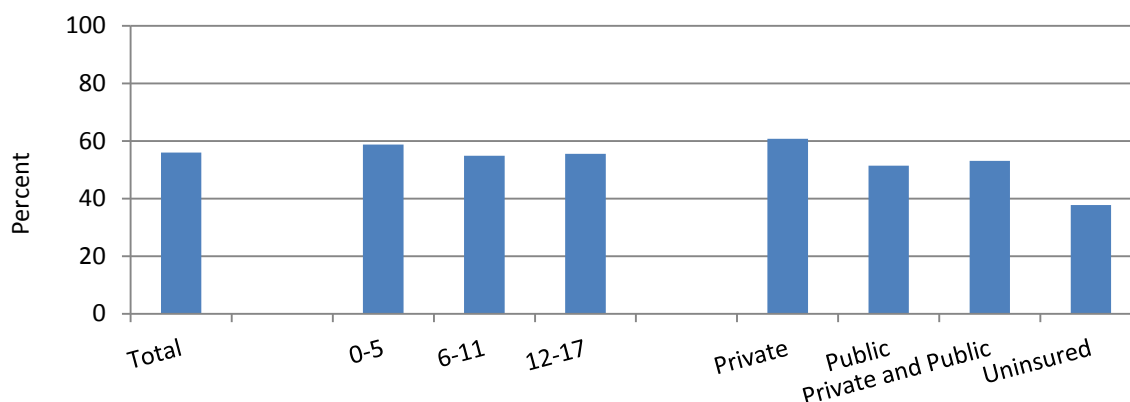
Addressing questions on access to and quality of care for children with chronic conditions is difficult due to the low prevalence of most conditions in children. A standard definition of CSHCN was developed in 1995. This definition was subsequently used to develop the CSHCN Screener Questionnaire and was included in the National Survey of Children With Special Health Care Needs, among other surveys.

According to the Medical Expenditure Panel Survey, in 2004, approximately 13.8 million children, or 20% of the population ages 0-17, were identified as having a special health care need (i.e., a specific chronic condition with a functional limitation or other consequence). Among the most highly prevalent chronic conditions of childhood in 2005 were asthma (13% of children under age 18), upper respiratory allergies (12% of children under 18), learning disabilities (7% of children ages 3-17), and attention-deficit/hyperactivity disorder (7% of children ages 3-17). Other conditions that may affect CSHCN include depression, spina bifida, hemophilia, HIV infection, cystic fibrosis, and metabolic disorders.

Having greater health care needs makes CSHCN susceptible to cost, quality, and access weaknesses in the health care system. Because they need more medical care, CSHCN have higher medical expenses, on average, than other children. For more than one in five CSHCN, costs of care caused financial problems for their families.

In addition to financial burdens, families of CSHCN spend considerable time caring for them. An estimated 9.7% of CSHCN had families who spent 11 or more hours per week providing or coordinating care in 2005-2006 (MCHB, 2007). Studies have documented that children with chronic conditions in poor families and racial and ethnic minority groups may experience lower quality care. Children with chronic conditions are reported by their parents to be less likely than other children to receive the full range of needed health services. Among CSHCN, minorities are more likely than White children to be without health insurance coverage or a usual source of care.

Figure 6.5. Effective care coordination among children with special health care needs, overall and by age and insurance status, 2009-2010



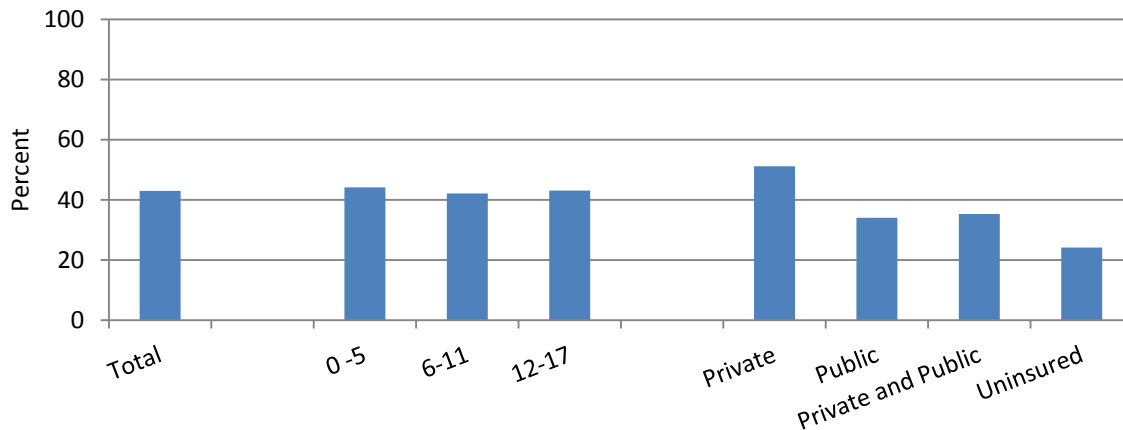
Source: Health Resources and Services Administration, Maternal and Child Health Bureau; Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children With Special Health Care Needs (CSHCN), 2009-2010.

Denominator: CSHCN who were reported to use more than one service during the survey period.

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- In 2009-2010, the percentage of CSHCN who had effective care coordination was higher for children ages 0-5 than for children ages 6-11 and 12-17 (58.8% compared with 54.9% and 55.5%, respectively; Figure 6.5).
- Also in 2009-2010, the percentage of CSHCN who had effective care coordination was higher for children with private insurance compared with children with only public insurance, private and public insurance, and no insurance (60.8% compared with 51.4%, 53.1%, and 37.7%, respectively).

Figure 6.6. Children with special health care needs with a medical home, overall and by age and insurance, 2009-2010



Source: Health Resources and Services Administration, Maternal and Child Health Bureau; Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Children With Special Health Care Needs (CSHCN), 2009-2010.

Denominator: Civilian noninstitutionalized population ages 0-17 with special health care needs.

- In 2009-2010, the percentage of CSHCN needs who had a medical home was higher for children ages 0-5 compared with children ages 6-11 and 12-17 (44.2% compared with 42.1% and 43.1%, respectively; Figure 6.6).
- Also in 2009-2010, the percentage of CSHCN who had a medical home was higher for children with private insurance compared with children with only public insurance, private and public insurance, and no insurance (51.2% compared with 34%, 35.3%, and 24.2%, respectively).

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Chapter 7. Efficiency

Health care cost increases continue to outpace the rise in wages, inflation, and economic growth. One approach to containing the growth of health care costs is to improve the efficiency of the health care delivery system. This approach would allow finite health care resources to be used in ways that best support high-quality care.

Recent work examining variations in Medicare spending and quality shows that higher cost providers do not necessarily provide higher quality care, illustrating the potential for improvement (Fisher, et al., 2003). Improving efficiency in the Nation's health care system is an important component of Department of Health and Human Services (HHS) efforts to support a better health care system.

Measures

Part of the discussion about how to improve efficiency involves the question about how best to measure it. Varying perspectives and definitions of health care efficiency exist; although consensus has not yet emerged on what constitutes appropriate measurement of efficiency, the Agency for Healthcare Research and Quality (AHRQ) has supported development in this area.

This chapter has been largely shaped by a number of documents that have developed the field of health care efficiency measurement. One major contributor is an AHRQ-commissioned report by RAND Corporation. This report systematically reviewed efficiency measures, assessed their tracking potential, and provided a typology that emphasizes the multiple perspectives on health care efficiency (McGlynn, 2008).

This chapter of the *National Healthcare Quality Report* is organized around the concepts of overuse and misuse. As noted in the *National Strategy for Quality Improvement in Health Care*,ⁱ “Achieving optimal results every time requires an unyielding focus on eliminating patient harms from health care, reducing waste, and applying creativity and innovation to how care is delivered.”

The measures this year are presented in the following layout:

- Inappropriate medication use:
 - Adults age 65 and over who received potentially inappropriate prescription medications.
- Preventable emergency department visits:
 - Potentially avoidable emergency department visit rates.
 - Emergency treatment for mental illness or substance abuse.
 - Emergency treatment for dental conditions.

ⁱ Available at www.healthcare.gov/center/reports/quality03212011a.html.

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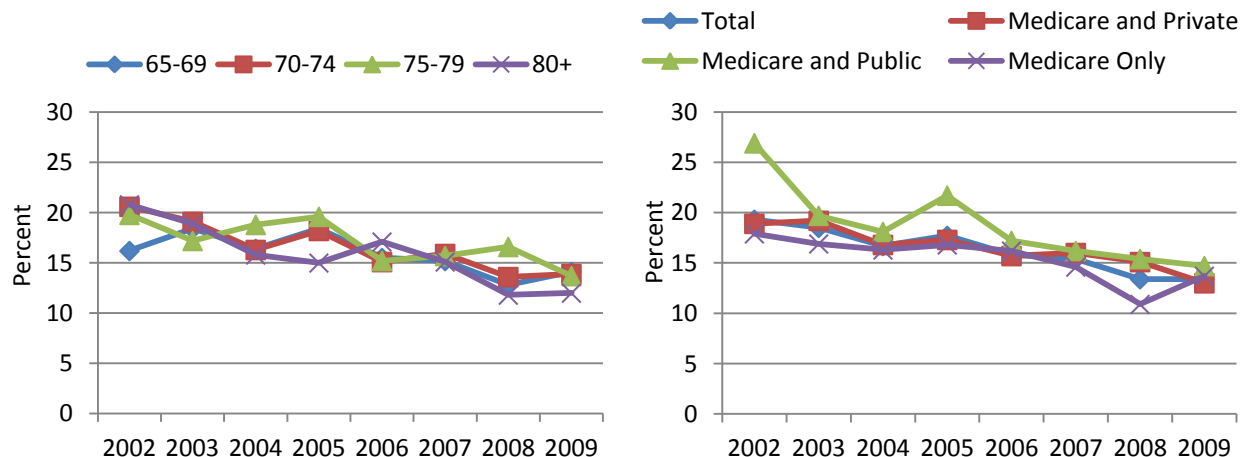
- Preventable hospitalizations:
 - Potentially avoidable hospitalization rates for adults.
 - Potentially avoidable hospitalization costs.
 - Potentially avoidable hospitalizations among Medicare home health and nursing home patients.
- Perforated appendixes.
- Trends in hospital cost efficiency.

Findings

Inappropriate Medication Use

Some drugs are potentially harmful for older patients but still are prescribed to them (Zhan, et al., 2001).ⁱⁱ Using inappropriate medications can be life threatening and may result in hospitalization, as well as increased costs of pharmaceutical services (Lau, et al., 2005). To measure inappropriate medication use, we have followed the Beers criteria, which have been generally accepted by the medical community and by expert opinion, although there is still some disagreement. This disagreement relates to the many factors that must be considered when identifying what constitutes inappropriate use by certain populations (Zhan, et al., 2001).

Figure 7.1. Adults age 65 and over who received potentially inappropriate prescription medications in the calendar year, by age and insurance, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population age 65 and over.

Note: For this measure, lower rates are better. Prescription medications received include all prescribed medications initially purchased or otherwise obtained, as well as any refills. Medicare and public are individuals with Medicare and some other public insurance (e.g., Medicaid).

ⁱⁱ Drugs that should always be avoided for older patients include barbiturates, flurazepam, meprobamate, chlorpropamide, meperidine, pentazocine, trimethobenzamide, belladonna alkaloids, dicyclomine, hyoscyamine, and propantheline. Drugs that should often or always be avoided for older patients include carisoprodol, chlorzoxazone, cyclobenzaprine, metaxalone, methocarbamol, amitriptyline, chlordiazepoxide, diazepam, doxepin, indomethacin, dipyridamole, ticlopidine, methyl dopa, reserpine, disopyramide, oxybutynin, chlorpheniramine, cyproheptadine, diphenhydramine, hydroxyzine, promethazine, and propoxyphene.

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- In 2009, there were no statistically significant differences by age or insurance in the percentage of adults age 65 and over who received potentially inappropriate medications (Figure 7.1).
- From 2002 to 2009, the overall percentage of adults age 65 and over who received potentially inappropriate medications decreased.

Also, in the NHDR:

- In 2009, the percentage of adults age 65 and over who received potentially inappropriate medications was higher for females than for males.

Preventable Emergency Department Visits

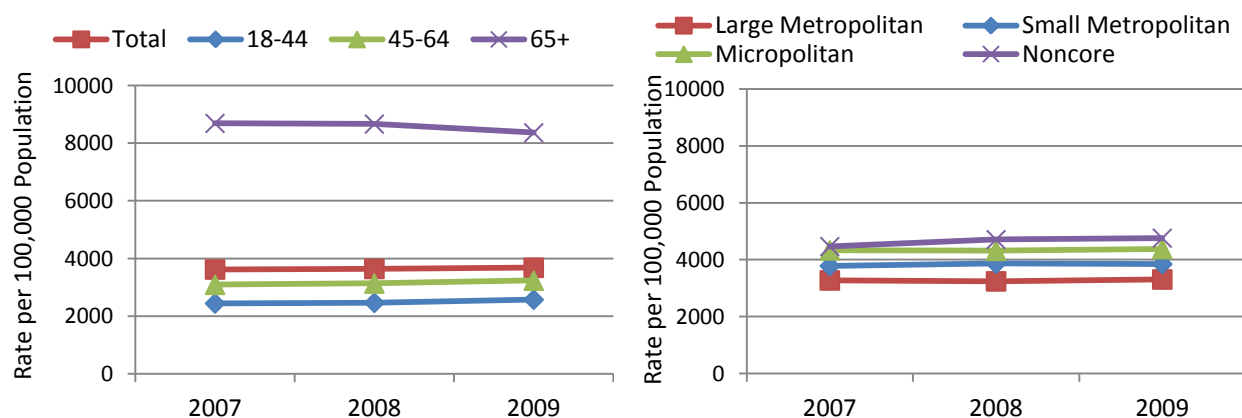
Potentially Avoidable Emergency Department Visit Rates for Adults

Potentially preventable, high-cost encounters with the medical system occur not only in hospitals, but also in emergency departments (EDs). There were more than 125 million ED encounters in 2008 (AHRQ, 2008). ED crowding, boarding (i.e., holding patients until an inpatient bed is available), and ambulance diversion have become more prevalent and have given rise to increasing concerns about the quality of care delivered in EDs.

Some hospitalizations and ED encounters cannot be avoided, but appropriate ambulatory care can help keep some patients from having to visit an ED or from being hospitalized. Reducing potentially avoidable ED encounters, in particular, holds promise for reducing cost, improving quality, and enhancing efficiency.

For this analysis, the AHRQ Prevention Quality Indicators software was applied to the Healthcare Cost and Utilization Project (HCUP) Nationwide Emergency Department Sample (NEDS). The overall potentially avoidable ED visit rate includes visits for acute conditions such as dehydration and pneumonia and chronic conditions such as diabetes and congestive heart failure.

Figure 7.2. Potentially avoidable emergency department rates, by age and residence location, 2007-2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2007-2009.

Denominator: Adults age 18 and over.

Note: Annual rates are adjusted for age and gender.

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- In 2009, the rate of ED visits for potentially avoidable conditions was 3,681 per 100,000 adults (Figure 7.2).
- In all years, adults ages 45-64 and age 65 and over had higher rates of potentially avoidable ED visits compared with adults ages 18-44.
- In all years, residents of small metropolitan, micropolitan, and noncore areas had higher potentially avoidable ED visit rates compared with residents of large metropolitan areas.

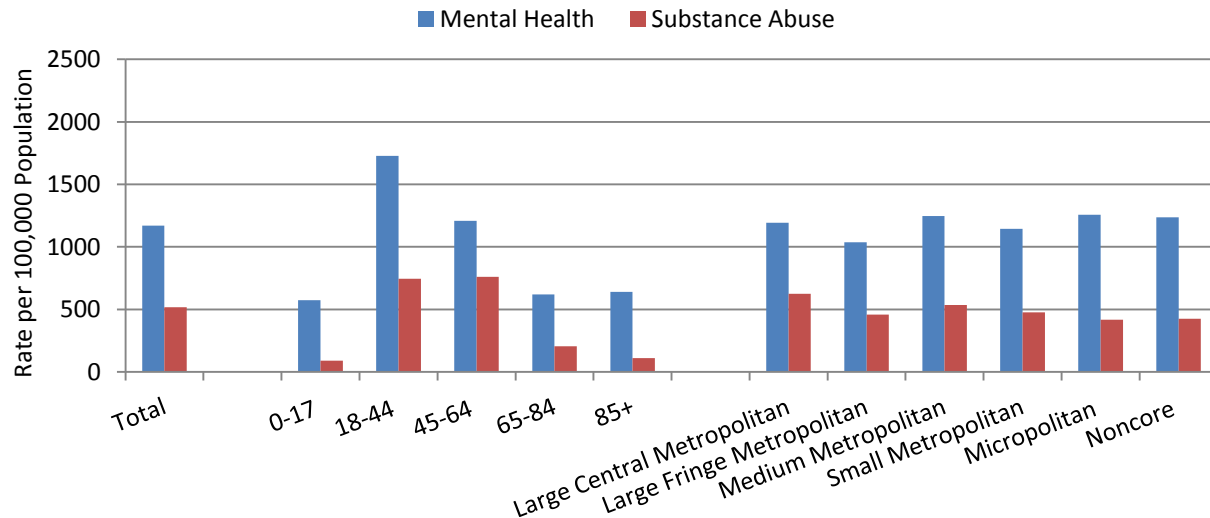
Also, in the NHDR:

- Women had a higher rate of potentially avoidable ED visits compared with men.
- Residents of the highest income quartile had a lower rate of potentially avoidable ED visits compared with residents of lower income quartiles.

Emergency Treatment for Mental Illness or Substance Abuse

When high-quality mental health care is not available in the community, patients with mental illness tend to rely on emergency rooms for care (Alakeson, et al., 2010). EDs are often not staffed or equipped to provide optimal psychiatric care, and patients with mental illness often wait long periods before receiving appropriate care. ED staff observing patients waiting for psychiatric care cannot care for patients with other medical emergencies. This measure provides information on the quality of the local mental health care system and the degree to which EDs function as safety net providers for people with mental health and substance abuse problems.

Figure 7.3. Rate of emergency department visits with a principal diagnosis related to mental health and alcohol or substance abuse, per 100,000 population, by age and residence location, 2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2009.

Denominator: U.S. population.

Note: For this measure, lower rates are better. Substance abuse includes visits for co-occurring substance abuse and mental health disorders.

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- In 2009, the rate of ED visits for mental health was 1,170 per 100,000 population, and the rate of ED visits for substance abuse (including co-occurring substance abuse and mental health disorders) was 518 per 100,000 (Figure 7.3).
- Children ages 0-17 and adults age 65 and over had lower rates of ED visits for mental health and for substance abuse compared with adults ages 18-44.
- Residents of large central metropolitan, medium metropolitan, small metropolitan, micropolitan, and noncore areas had higher rates of ED visits for mental health compared with residents of large fringe metropolitan areas (suburbs). Residents of large central and medium metropolitan areas also had higher rates of ED visits for substance abuse compared with residents of large fringe metropolitan areas.

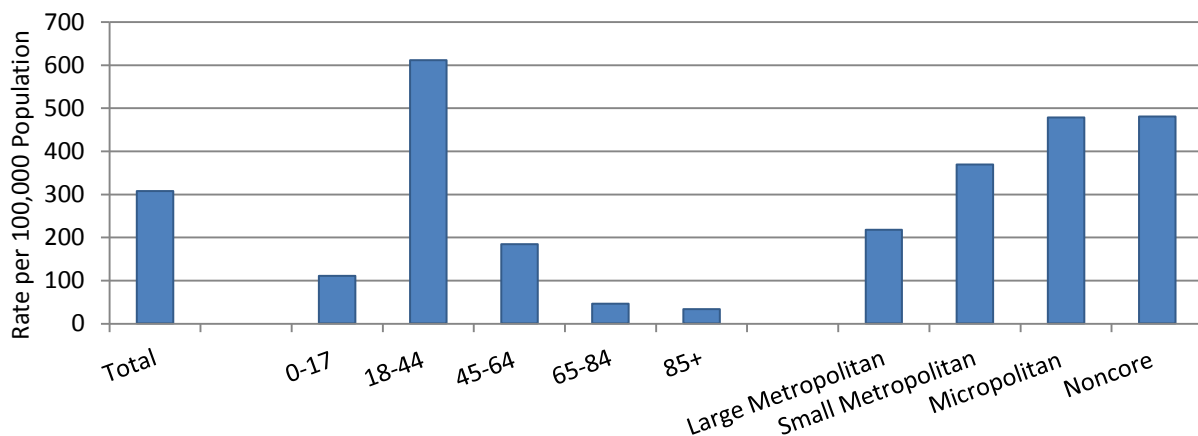
Also, in the NHDR:

- Compared with males, females had a higher rate of ED visits for mental health but a lower rate of ED visits for substance abuse.
- Residents of the highest income quartile had lower rates of ED visits both for mental health and for substance abuse compared with residents of lower income quartiles.

Emergency Treatment for Dental Conditions

Dental health requires periodic oral exams and timely treatment of tooth decay and gum disease. When patients do not access outpatient dental services, dental disease may progress and necessitate emergent treatment and even hospitalization. EDs often cannot provide definitive dental treatment and can only provide medication for pain and infection. Hence, use of EDs for dental conditions may reflect system inefficiency in the delivery of dental care.

Figure 7.4. Rate of emergency department visits with a principal diagnosis related to dental issues, per 100,000 population, by age and residence location, 2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2009.

Denominator: U.S. population.

Note: For this measure, lower rates are better.

- In 2009, the rate of ED visits for dental conditions was 307 per 100,000 population (Figure 7.4).

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- Children ages 0-17 and adults age 45 and over had lower rates of ED visits for dental conditions compared with adults ages 18-44.
- Residents of small metropolitan, micropolitan, and noncore areas had higher rates of ED visits for dental conditions compared with residents of large metropolitan areas.

Also, in the NHDR:

- Residents of the highest income quartile had lower rates of ED visits for dental conditions compared with residents of lower income quartiles.

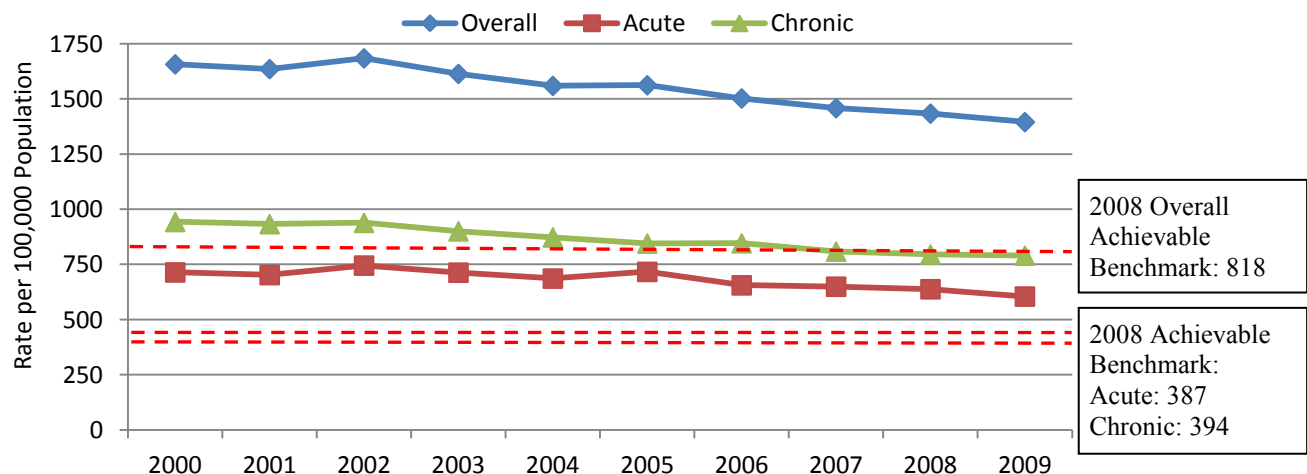
Preventable Hospitalizations

Potentially Avoidable Hospitalization Rates for Adults

Hospitalization is expensive. Preventing avoidable hospitalizations could improve the efficiency of health care delivery. To address potentially avoidable hospitalizations from the population perspective, data on ambulatory care-sensitive conditions are summarized here using the AHRQ Prevention Quality Indicators (PQIs). Not all hospitalizations that the AHRQ PQIs track are preventable. But ambulatory care-sensitive conditions are those for which good outpatient care can prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease.

The AHRQ PQIs track these conditions using hospital discharge data. Hospitalizations for acute conditions, such as dehydration or pneumonia, are distinguished from hospitalizations for chronic conditions, such as diabetes or congestive heart failure. Results presented this year apply a modified version 4.1 of the AHRQ Quality Indicators and are not comparable to results from previous years.

Figure 7.5. Potentially avoidable hospitalization rates for adults, by type of hospitalization, 2000-2009



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2000-2009.

Denominator: Civilian noninstitutionalized adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and gender.

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- From 2000 to 2009, the overall rate of avoidable hospitalizations fell from 1,657 to 1,395 per 100,000 population (Figure 7.5). Declines in avoidable hospitalizations were observed for both acute and chronic conditions.
- In 2008, the top 3 State achievable benchmark for all potentially avoidable hospitalizations was 818 per 100,000 population.ⁱⁱⁱ The overall achievable benchmark could not be attained for 18 years.
- The top 3 State achievable benchmark for acute potentially avoidable hospitalizations was 387 per 100,000 population.^{iv} The acute achievable benchmark also could not be attained for 18 years.
- The top 3 State achievable benchmark for potentially avoidable hospitalizations for chronic conditions was 394 per 100,000 population.^v The chronic achievable benchmark could not be attained for 21 years.

Also, in the NHDR:

- In all years, rates of potentially avoidable hospitalizations were lower among Asians and Pacific Islanders compared with Whites. Rates were higher among Blacks compared with Whites.
- In all years, rates of potentially avoidable hospitalizations were higher among residents of areas in the lowest and second income quartiles compared with residents of the highest income quartile.

Potentially Avoidable Hospitalization Costs

The costs associated with potentially avoidable hospitalizations can be calculated to estimate how much money could be saved by eliminating such services. For this analysis, total hospital charges were converted to costs using HCUP cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare & Medicaid Services. Therefore, cost estimates in this section refer to hospital costs for providing care but do not include either payers' costs or costs for physician care that are billed separately.

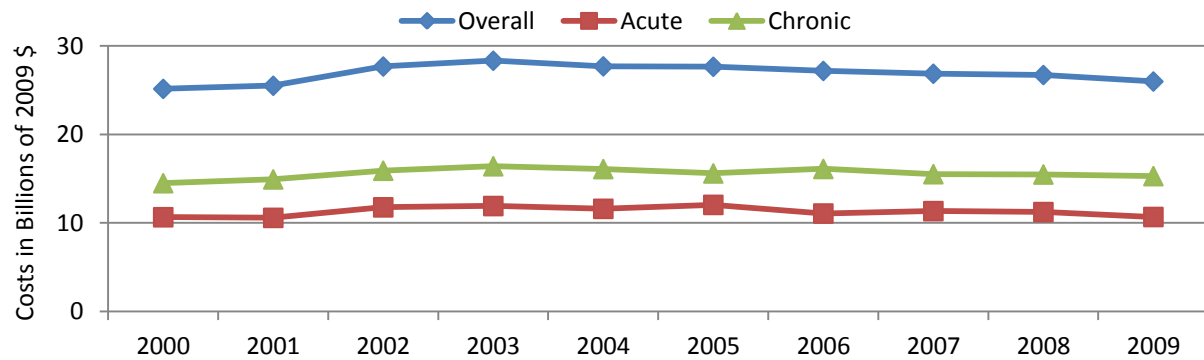
ⁱⁱⁱ The top 3 States that contributed to the overall achievable benchmark are Hawaii, Utah, and Washington.

^{iv} The top 3 States that contributed to the acute achievable benchmark are Hawaii, Utah, and Washington.

^v The top 3 States that contributed to the chronic achievable benchmark are Utah, Vermont, and Washington.

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Figure 7.6. Total national costs associated with potentially avoidable hospitalizations, 2000-2009



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, and AHRQ Quality Indicators, modified version 4.1, 2000-2009.

Denominator: Civilian noninstitutionalized adults age 18 and over.

Note: For this measure, lower rates are better. Annual rates are adjusted for age and gender. Costs are adjusted for inflation and are represented in 2009 dollars.

- From 2000 to 2003, total national hospital costs associated with potentially avoidable hospitalizations^{vi} increased from \$25.1 billion to \$28.3 billion. Since then, costs have been gradually declining, to \$26.0 billion in 2009 (Figure 7.6).
- These changes are largely attributable to avoidable hospitalizations for chronic conditions, with national hospital costs that increased from \$14.5 billion to \$16.4 billion between 2000 and 2003 and then declined to \$15.3 billion in 2009.
- Changes in avoidable hospitalizations for acute conditions also contributed, with national hospital costs that increased from \$10.7 billion to \$11.9 billion between 2000 and 2003 and then declined to \$10.7 billion in 2009.

Potentially Avoidable Hospitalizations Among Medicare Home Health and Nursing Home Patients

Many patients are hospitalized while receiving care from home health agencies and nursing homes, with resulting high costs and care transition problems. A number of these hospitalizations are appropriate. However, some hospital admissions could be prevented with better primary care and monitoring in these settings, or the patient could receive appropriate treatment in a less resource-intensive setting.

Using the AHRQ PQIs, we track potentially avoidable hospitalizations among Medicare patients occurring within 30 days of the start of home health or nursing home care. These patients may differ from patients discussed earlier in this chapter who are predominantly admitted for avoidable conditions from home. At home, some are receiving appropriate primary care and others have not visited a health care provider for years.

In contrast, Medicare home health and nursing home patients have regular contact with health providers, which should reduce rates of avoidable hospitalization. However, these patients are also more acutely ill, may become seriously ill when affected by a new illness, and may have multiple comorbidities. Medicare patients in these settings often have been hospitalized recently.

^{vi} Adjusted for inflation. The inflation adjustment was done using the gross domestic product implicit price deflator.

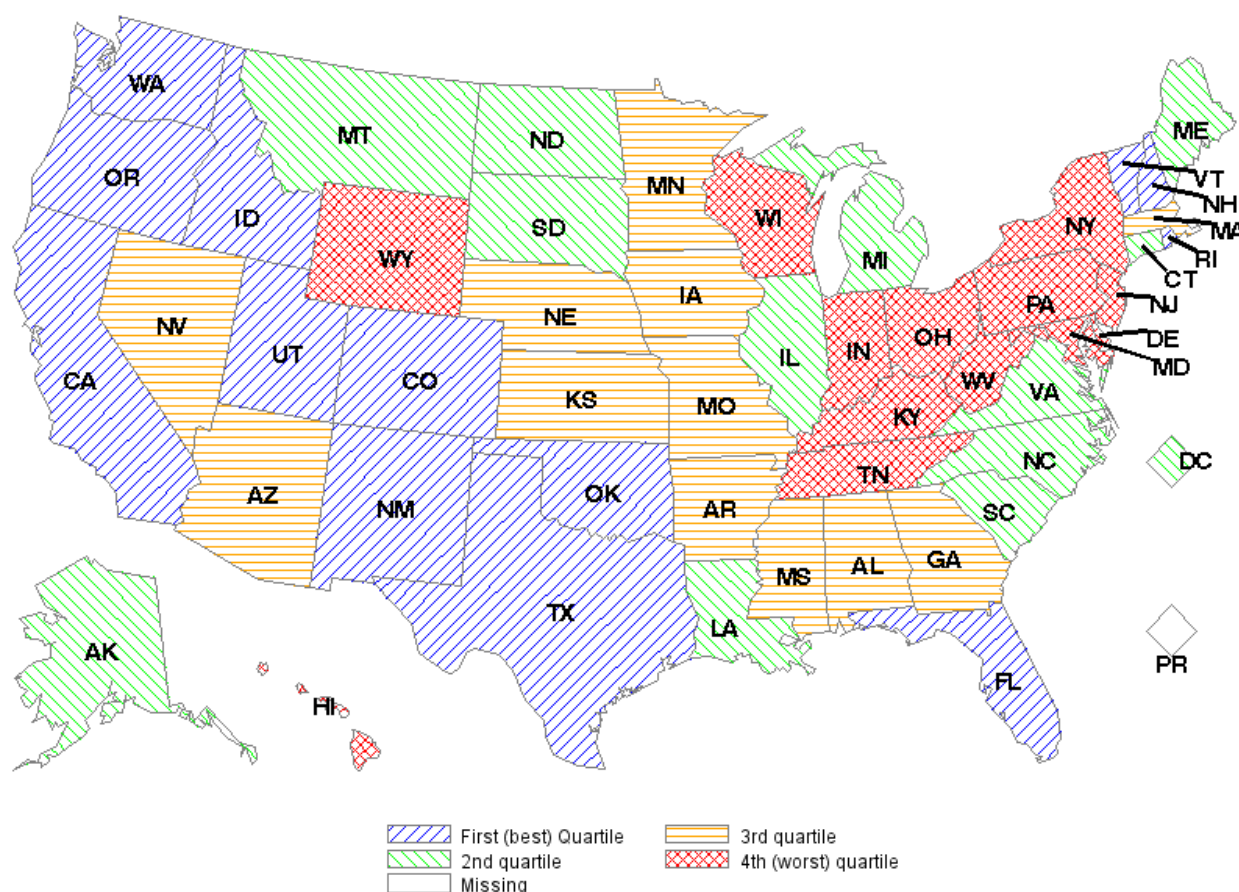
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Therefore, an avoidable hospitalization may represent a return to the hospital, perhaps against the expectation that the patient no longer needed acute care.

For application to home health and nursing home settings, the potentially avoidable stays are identified within a defined time period, 30 days, from the home health or nursing home admission date. If a patient is hospitalized more than once in that period, only the first stay is recognized for the measure.

Data on home health patients come from Medicare fee-for-service (FFS) home health claims and Outcome and Assessment Information Set patient assessment information. Data on nursing home patients come from Medicare skilled nursing facility (SNF) FFS claims and Minimum Data Set patient assessment information. These data are linked with Medicare Part A acute care hospital claims to determine hospitalizations for potentially avoidable conditions. The maps below show State performance in quartiles for home health patients and nursing home patients.

Figure 7.7. Home health patients with potentially avoidable hospitalizations within 30 days of start of care, by State, 2008



Source: Centers for Medicare & Medicaid Services, Outcome and Assessment Information Set linked with Medicare Part A claims (100%), 2008.

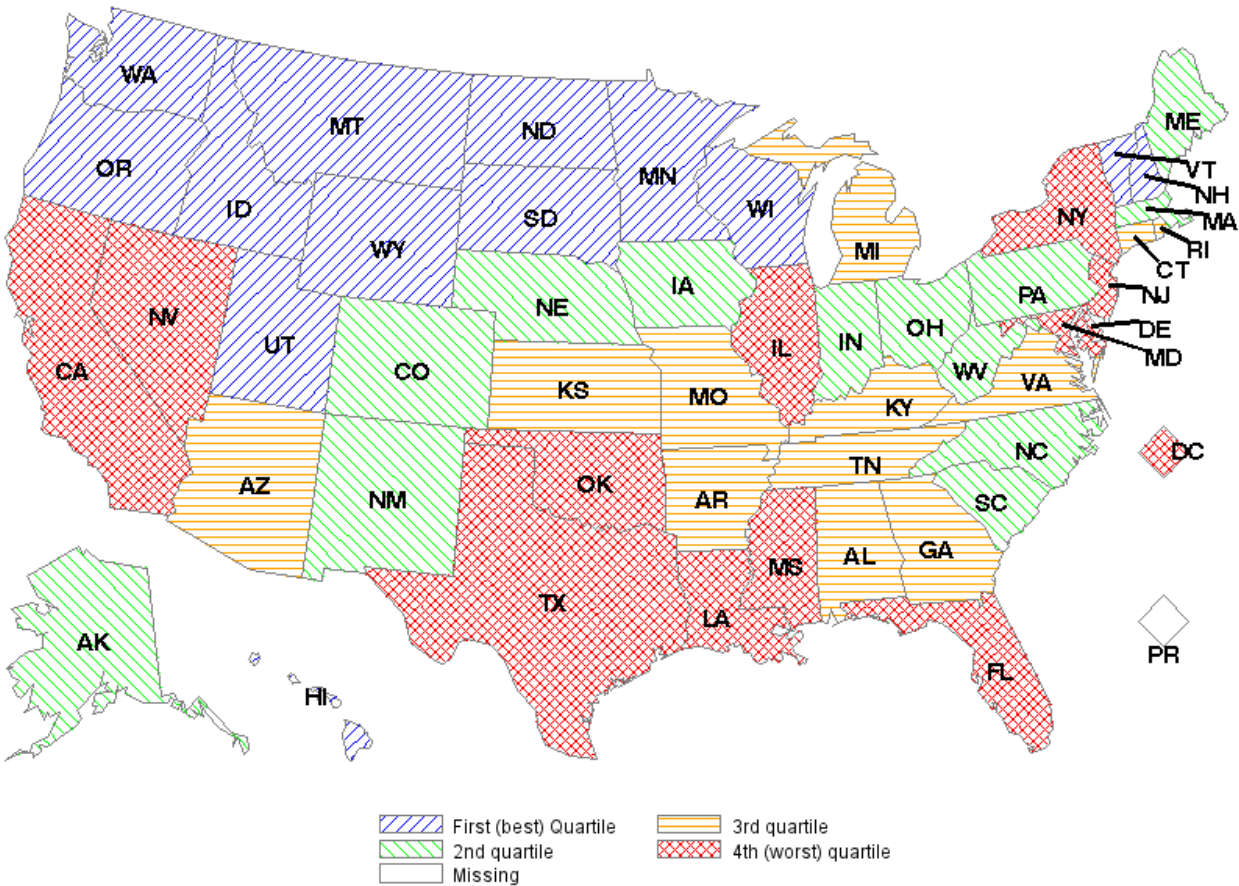
Denominator: Adult nonmaternity patients starting an episode of home health care.

Note: For this measure, lower numbers are better.

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- The percentage of home health patients with potentially avoidable hospitalizations ranged from 2.3% to 5.7%.
- Potentially avoidable hospitalizations account for 28% of all-cause hospitalizations among home health patients.
- All-cause hospitalizations ranged from 9% to 17.4%.

Figure 7.8. Residents with skilled nursing facility stays with potentially avoidable hospitalizations within 30 days of admission, by State, 2008



Source: Centers for Medicare & Medicaid Services, Minimum Data Set 2.0, linked with Medicare Part A claims (100%), 2008.

Denominator: Residents who met the skilled nursing facility criteria for nursing home admission.

Note: For this measure, lower numbers are better.

- The percentage of SNF residents with potentially avoidable hospitalizations ranged from 0.7% to 2.3 %.
- Potentially avoidable hospitalizations accounted for 35% of all-cause hospitalizations among SNF residents.
- All-cause hospitalizations ranged from 3.5% to 8.8%.

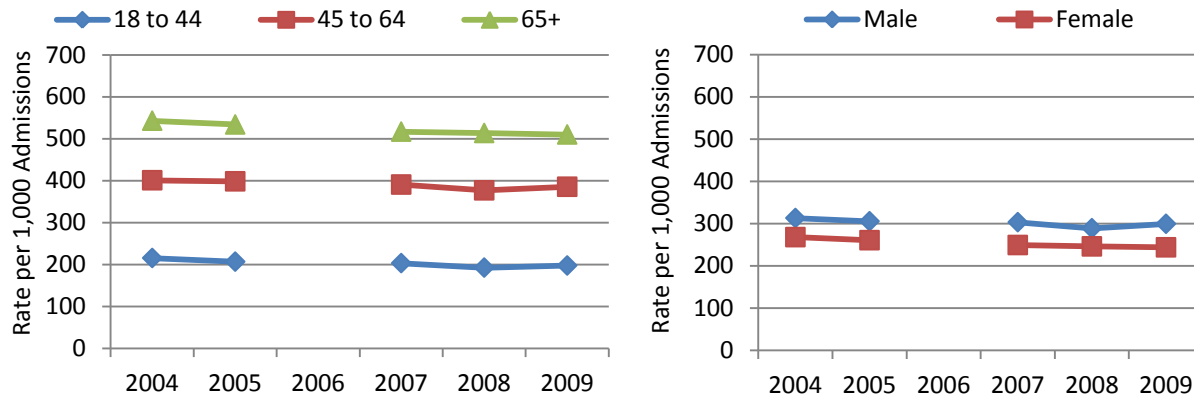
Perforated Appendixes

Perforation is a severe complication of appendicitis that allows intestinal contents to spill into the abdominal cavity. Patients with a perforated appendix have a worse prognosis and require longer

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recovery times after surgery than patients whose appendix does not rupture. More timely detection and treatment of appendicitis can reduce the percentage of appendicitis admissions in which rupture has occurred.

Figure 7.9. Perforated appendixes per 1,000 admissions for appendicitis, by age and gender, 2004, 2005, and 2007-2009



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases disparities analysis file, 2004, 2005, and 2007-2009.

Note: For this measure, lower rates are better. Data for 2006 are not included, because a new version of the PQI software was used to calculate rates and 2006 was not included in the calculation.

- In 2009, the rate of perforated appendixes was higher for those age 65 and over and those ages 45-64 than for those ages 18-44 (510.2 and 385.5 per 1,000 admissions, respectively, compared with 197.7; Figure 7.9).
- Also in 2009, there were no statistically significant differences by gender.

Trends in Hospital Efficiency

Significant attention has been paid to cost variations across providers and across the country. Yet it is often difficult to separate out costs that reflect differences among providers in outputs, patient burden of illness,^{vii} or care quality.^{viii} To address the provider perspective, hospital cost efficiency is examined using a technique from the field of econometrics that can account for such differences.^{ix} This analysis uses data from the American Hospital Association Annual Survey

^{vii} This analysis controls for the following components that Elixhauser, et al. (1998) contend are part of patient burden of illness: (1) primary reason for admission to the hospital, (2) severity of the principal diagnosis, (3) iatrogenic complications, and (4) comorbidities that are unrelated to the primary diagnosis but have a substantial impact on both the resources used to treat the patient and the outcomes of the care provided.

^{viii} To control for quality, this analysis uses risk-adjusted rates of the following AHRQ Quality Indicators: in-hospital mortality for (1) acute myocardial infarction, (2) congestive heart failure, (3) stroke, (4) gastrointestinal hemorrhage, (5) hip fracture, and (6) pneumonia; failure to rescue; iatrogenic pneumothorax; infection due to medical care; and accidental puncture and laceration (Mutter, et al., 2008).

^{ix} Stochastic frontier analysis (SFA) is the technique used in this analysis. SFA can estimate best practice costs as the value total costs would be if full efficiency were attained. The hospital-level “cost efficiency” estimates SFA produces measure whether output is obtained using the fewest inputs (i.e., technical efficiency), as well as whether output is produced using the optimal mix of inputs, given prices (i.e., allocative efficiency), the size of a hospital’s operations (i.e., scale efficiency), and the range of a hospital’s operations (i.e., scope efficiency), including possible overspecialization or overdiversification (McGlynn, 2008).

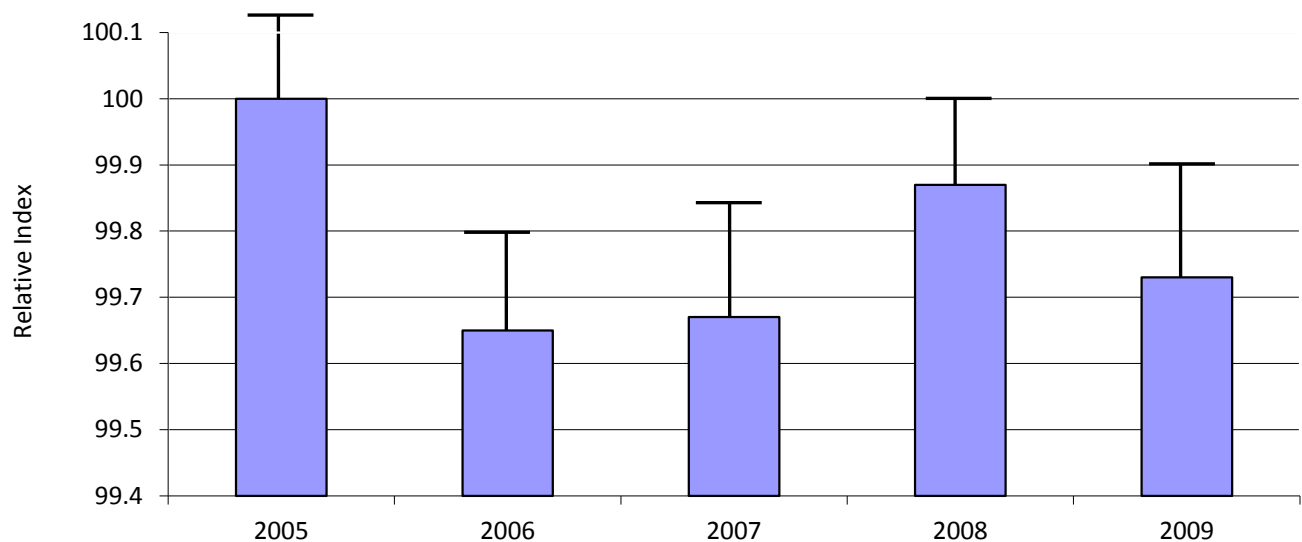
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and from Medicare Cost Reports, as well as data derived from the application of AHRQ Quality Indicators software and the Comorbidity Software to HCUP data.

Here, hospital efficiency is defined as the ratio of best practice costs to total observed costs. For example, given the types and quantities of outputs a hospital produces, the input prices it pays, its case mix, its quality, and its market characteristics, a theoretical best practice hospital might incur expenses amounting to \$90 million. A comparison hospital in an identical situation with total expenses of \$100 million would have an estimated cost efficiency of 90%.

Cost-efficiency estimates have been converted to index numbers with a base of 100 for the year 2005 as a way to place less emphasis on the specific magnitude of estimated hospital efficiency than on its general trend (Mutter, et al., 2008).

Figure 7.10. Average estimated relative hospital cost efficiency index for a selected sample of urban general community hospitals (with confidence interval brackets), 2005-2009



Source: Agency for Healthcare Research and Quality.

Note: Analysis based on 1,552 urban general community hospitals with data in the Healthcare Cost and Utilization Project, State Inpatient Databases. See Chapter 1, Introduction and Methods, for further details.

- The highest level of efficiency occurred in 2005. Changes in cost efficiency were essentially flat during the period and none of the year means was significantly different than the index year mean of 100 (Figure 7.10).
- The most cost-efficient hospitals (i.e., hospitals in the highest quartile of estimated cost efficiency) compared favorably with the least cost-efficient hospitals (i.e., hospitals in the lowest quartile of estimated cost efficiency) on a number of important variables. The most cost-efficient hospitals had lower costs and fewer full-time-equivalent employees per case-mix-adjusted admission, compared with the least cost-efficient hospitals. The most cost-efficient hospitals also had a shorter average length of stay, although the difference was not statistically significant (Table 7.1).

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- The most cost-efficient hospitals had a higher operating margin^x than the least cost-efficient hospitals (Table 7.1).

Table 7.1. Correlates of hospital cost efficiency

Measure	Estimate	Standard deviation	Standard error mean
Cost per case-mix-adjusted admission			
Top quartile of hospital cost efficiency*	8,242.21	2,737.80	138.99
Bottom quartile of hospital cost efficiency	12,160.84	5,244.72	266.26
Full-time equivalent employees per case-mix-adjusted admission			
Top quartile of hospital cost efficiency	0.58	0.16	0.01
Bottom quartile of hospital cost efficiency	0.77	0.24	0.01
Average length of stay (days)			
Top quartile of hospital cost efficiency	4.87	1.15	0.06
Bottom quartile of hospital cost efficiency	5.04	1.63	0.08
Operating margin			
Top quartile of hospital cost efficiency	0.04	0.13	0.01
Bottom quartile of hospital cost efficiency	-0.04	0.16	0.01

Source: Agency for Healthcare Research and Quality.

Note: Analysis based on 2009 values for 1,552 urban general community hospitals.

It is important to note that the figures reported above are not national estimates and that no conclusions about national trends should be inferred. However, the hospitals in the analysis represent about 60% of all non-Federal urban general community hospitals and therefore provide an indication of the general trend that cost efficiency may be following.

^x Operating margin is a commonly used measure of profitability from operations or the excess of revenue over expenses. It is calculated by the following formula: Operating margin = (total net patient revenue – total operating expenses)/ total net patient revenue.

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Chapter 8. Health System Infrastructure

In its 2010 report *Future Directions for the National Healthcare Quality and Disparities Reports*, the Institute of Medicine (IOM, 2010) recommended that future editions of the *National Healthcare Quality Report* (NHQR) and *National Healthcare Disparities Report* (NHDR) include data on the health care system's infrastructure capabilities. According to the IOM:

These components are not necessarily health care aims/attributes in themselves, but are a means to those aims since they are elements of the health care system that better enable the provision of quality care....and health systems infrastructure are of interest to the extent that they improve effectiveness, safety, timeliness, patient-centeredness, access, or efficiency.

Acknowledging that the measures and data required to assess the strength and capabilities of the health care infrastructure have not been well developed, the IOM identified structural elements that may affect quality improvement. Key elements include:

- Information systems for data collection, quality improvement analysis, and clinical communication support;
- An adequate and well-distributed workforce; and
- Organizational capacity to support emerging models of care, cultural competence services, and ongoing improvement efforts.

Of significance, inadequacies in health system infrastructure may limit access and contribute to poor quality of care and outcomes, particularly among vulnerable population groups that include racial and ethnic minority groups and people residing in areas with health professional shortages.

This chapter presents data to illustrate the strength of the U.S. health system infrastructure and how this infrastructure may influence quality of care. The chapter is divided into three sections, each addressing a unique aspect of the health care system:

- Health information technology (IT),
- Workforce distribution, and
- Health care safety net.

The chapter begins with data to describe the adoption and use of health IT. Use of health IT can be an effective way to manage health care costs and improve the quality of care.

Since the publication of the IOM report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare*,ⁱ which emphasized the need for standardized collection and reporting of racial and ethnic data, the need for more granular detail on racial and ethnic subgroups has become apparent. This is an area where the adoption and use of health IT can be beneficial.

Another area of patient care that could be improved with the adoption and use of health IT is care coordination. A Commonwealth Fund study found that health IT can facilitate care coordination

ⁱ Available at the National Academies Press Web site at <http://www.nap.edu/openbook.php?isbn=030908265X>.

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within a practice, but a lack of interoperability makes exchange of information between health care facilities difficult (Shih, et al., 2008).

Evidence has also shown that the adoption and effective use of health IT can help reduce medical errors and adverse events, enable better documentation and file organization, provide patients with information that assists their adherence to medication regimens and scheduled appointments, and assist doctors in tracking their treatment protocols (IOM, 2010).

Following presentation of measures of the use of health IT, data on health care workforce diversity are presented. An adequate supply of health care providers is an important indicator of health care quality. Aside from a provider-to-population ratio that effectively meets demand for care, it is important that the workforce be appropriately distributed.

In previous quality and disparities reports, data have been presented on diversity in the nursing, dental, pharmacy, and allied health professional workforce. This year, the NHQR and NHDR present data on the geographic and racial/ethnic distribution of primary care physicians and primary care specialists.

The distribution and availability of a culturally competent health care workforce has significant repercussions for access to care, particularly among the Nation's most vulnerable populations—racial and ethnic minorities, low-income populations, and uninsured or underinsured people. People who cannot access health care services, either because of financial considerations or inadequacy in the local health care infrastructure, often rely on safety net providers for essential health care services. The final section presents measures related to the performance of safety net providers, including people served, characteristics of selected safety net providers, and patient outcomes.

Measures

The IOM acknowledges that health system infrastructure measures such as adoption and effective use of health IT are likely to be in the developmental stage, and evidence of the impact on quality improvement has not yet been strongly established. The IOM highlighted three infrastructure capabilities that should be further evaluated for reporting. These capabilities include adoption and use of health IT, workforce distribution and its relevance to minority and other underserved populations, and care management processes.

Findings

Health Information Technology: Focus on Electronic Health Records

According to the Office of the National Coordinator for Health IT, an electronic health record (EHR) is a real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decisionmaking. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and disease surveillance and reporting for public health purposes.

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The IOM report *Future Directions for the National Healthcare Quality and Disparities Reports* highlights the adoption and use of health IT as a tool to manage cost and improve the quality of care delivered (IOM, 2010). Meaningful use of an EHR, for instance, is increasingly viewed as essential to improving both the efficiency of service delivery and health care quality (Resnick & Alwan, 2010).

Health providers using EHRs have reported improvement in clinical decisionmaking and communication with other providers and patients, as well as faster and more accurate access to medical records and avoidance of medical errors (Romano & Stafford, 2011). Components of EHRs, such as computerized provider order entry (CPOE) and clinical decision support (CDS), have been found to be associated with significant reductions in medication errors (Devine, et al., 2010).

CPOE systems are computer applications that allow direct electronic entry of orders for medications, laboratory tests, radiology services, referrals, and procedures. CDS encompasses a wide range of computerized tools directed at improving patient care, including alerts, reminders, order sets, drug dose calculations that automatically remind the clinician of a specific action, and care summary dashboards that provide feedback on quality indicators (Bright, et al., 2012).

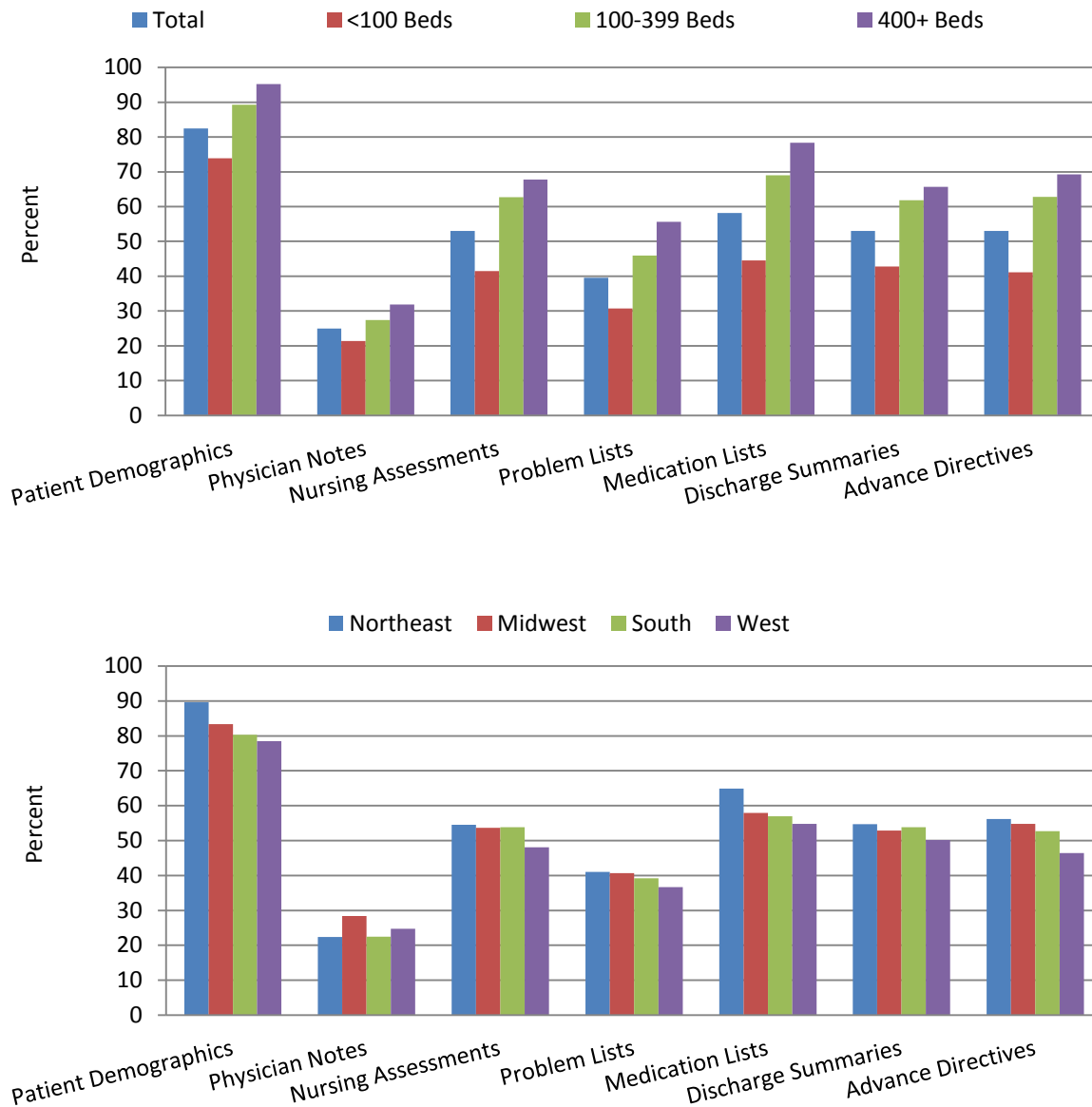
Electronic Health Records in Hospitals

The 2012 Commonwealth Fund report *Using Electronic Health Records To Improve Quality and Efficiency: The Experience of Leading Hospitals* found that successful implementation of EHRs depends on strong leadership, full involvement of clinical staff in design and implementation, and mandatory staff training. EHRs can improve health care quality and patient safety through the use of checklists and alerts and by promoting evidence-based practices. EHRs can increase efficiency by alerting physicians to duplicate orders and enabling faster prescribing and test ordering while reducing errors and redundancy. This year's NHQR tracks overall EHR use in hospitals.

EHRs can improve the quality and safety of care in all types of hospitals and in departments within hospitals. In emergency departments, for instance, electronic clinical documentation and decision support can help mitigate problems of treating new patients with complicated medical histories and gaps in their medical records. EHRs can also provide effective decision support and clinical reminders to facilitate a seamless transition of care by reducing communication breakdown between different providers.

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Figure 8.1. Electronic medical record use in hospitals, by geographic region and hospital size, 2010



Source: American Hospital Association Annual Survey 2010 Information Technology Supplement.

Note: Data were obtained from an average of 3,131 hospitals.

Patient Demographics

- In 2010, 82.5% of hospitals with an EHR system had a component for patient demographics. The percentage of hospitals with EHR systems that had a component for patient demographics was higher for hospitals with 400 beds or more (95.2%) compared with hospitals with 100-399 beds (89.3%) and hospitals with fewer than 100 beds (73.9%; Figure 8.1).
- Hospitals in the Northeast had the highest rate of EHR systems with a component for patient demographics (89.6%). In the Midwest and the South, 83.4% and 80.3% of

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hospitals, respectively, had an EHR system with a patient demographics component. In the West, 78.5% of hospitals had an EHR system with a patient demographics component.

- More than 86% of urban hospitals and 78.1% of rural hospitals had an EHR system with a component for patient demographics (data not shown).

Physician Notes and Nursing Assessments

- In hospitals with an EHR system, 25.0% support physician notes and 53.0% support nursing assessments.
- The percentage of hospitals with electronic systems that support both physician notes and nursing assessments was higher for hospitals with 400 beds or more than for hospitals with fewer than 400 beds.
- More than 28% of hospitals in the Midwest, 24.7% of hospitals in the West, 22.5% of hospitals in the South, and 22.4% of hospitals in the Northeast had electronic systems that support physician notes. More than 54% of hospitals in the Northeast, 53.8% of hospitals in the South, 53.7% of hospitals in the Midwest, and 48.1% of hospitals in the West had electronic systems that support nursing assessments.
- Nearly 27% of urban hospitals and 23.0% of rural hospitals had an EHR system with a component for physician notes. More than 57% of urban hospitals and 48.0% of rural hospitals had an EHR system with a component for nursing assessments (data not shown).

Problem Lists and Medication Lists

- In 2010, 39.6% of hospitals with an EHR system had a component for problem lists and 58.2% had a component for medication lists.
- The percentage of hospitals with electronic systems that support both problem lists and medication lists was higher for hospitals with 400 beds or more than for hospitals with fewer than 400 beds.
- Forty-one percent of hospitals in the Northeast, 40.7% of hospitals in the Midwest, 39.2% of hospitals in the South, and 36.7% of hospitals in the West had electronic systems that support problem lists. Nearly 65% of hospitals in the Northeast, 57.9% of hospitals in the Midwest, 57.0% of hospitals in the South and 54.8% of hospitals in the West had electronic systems that support medication lists.

Discharge Summaries and Advance Directives

- In 2010, 53.0% of hospitals with an EHR system had a component for discharge summaries and advance directives.
- The percentage of hospitals with electronic systems that support both discharge summaries and advance directives was higher for hospitals with 400 beds or more than for hospitals with fewer than 400 beds.
- Nearly 55% of hospitals in the Northeast, 53.8% of hospitals in the South, 52.9% of hospitals in the Midwest, and 50.2% of hospitals in the West had electronic systems that support discharge summaries. More than 56% of hospitals in the Northeast, 54.8% of hospitals in the Midwest, 52.7% of hospitals in the South, and 46.4% of hospitals in the West had electronic systems that support advance directives.

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Also, in the NHDR:

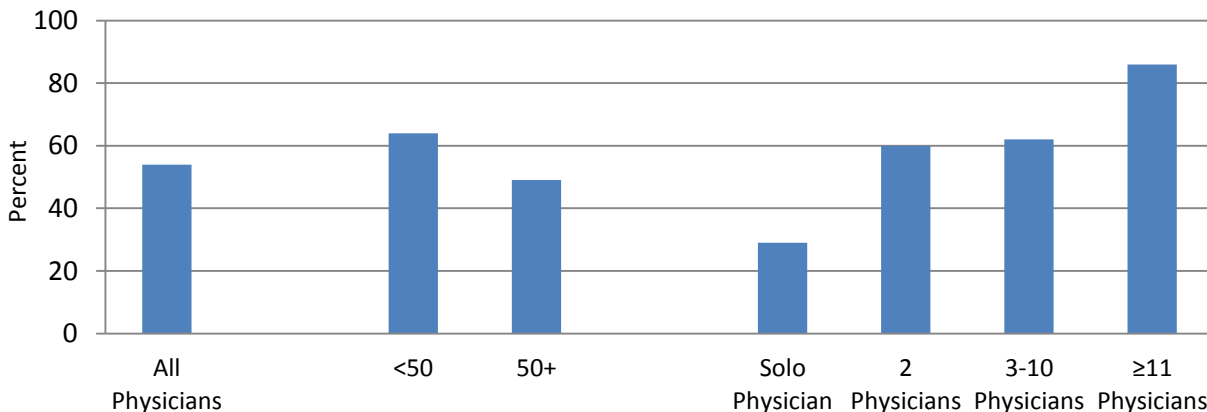
- In 2010, the percentage of Federal Government hospitals with electronic systems that support patient demographics, physician notes, nursing assessments, problem lists, medication lists, discharge summaries, and advance directives was much higher than the percentage for not-for-profit, non-Federal, and investor-owned hospitals.

Electronic Health Records in Physician Practices

In addition to alerts, guidelines, and electronic ordering, the ability to exchange health information efficiently between providers leads to better access to quality care and improved patient safety. Many factors outside of the physician's control may help determine his or her ability to adopt an EHR system. Unfortunately, practice size and availability of resources affect EHR adoption rates. Thus, the potential quality and efficiency benefits of an EHR system may be unavailable to resource-constrained organizations that are constantly challenged to “do more with less” (McAlearney, et al., 2010).

The most frequent reason cited for not adopting health IT is cost and potential loss of productivity. EHRs cost almost \$44,000 per full-time-equivalent provider, with ongoing costs of \$8,400 annually (Samantaray, et al., 2011).

Figure 8.2. Electronic health record use overall and by age and practice size, 2011



Source: Jamoom E, Beatty P, Bercovitz, et al. Physician adoption of electronic health record systems: United States, 2011. NCHS data brief, no 98. Hyattsville, MD: National Center for Health Statistics; 2012.

Overall Electronic Health Record System Adoption

- In 2011, 54% of physicians had adopted an EHR (Figure 8.2).
- In 2011, 64% of physicians under age 50 had an EHR system but only 49% of physicians age 50 and over had an EHR system.
- In 2011, the percentage of physicians working in practices of 11 or more who had an EHR system was nearly three times as high as the percentage of physicians in solo practices who had an EHR system.

Also, in the NHDR:

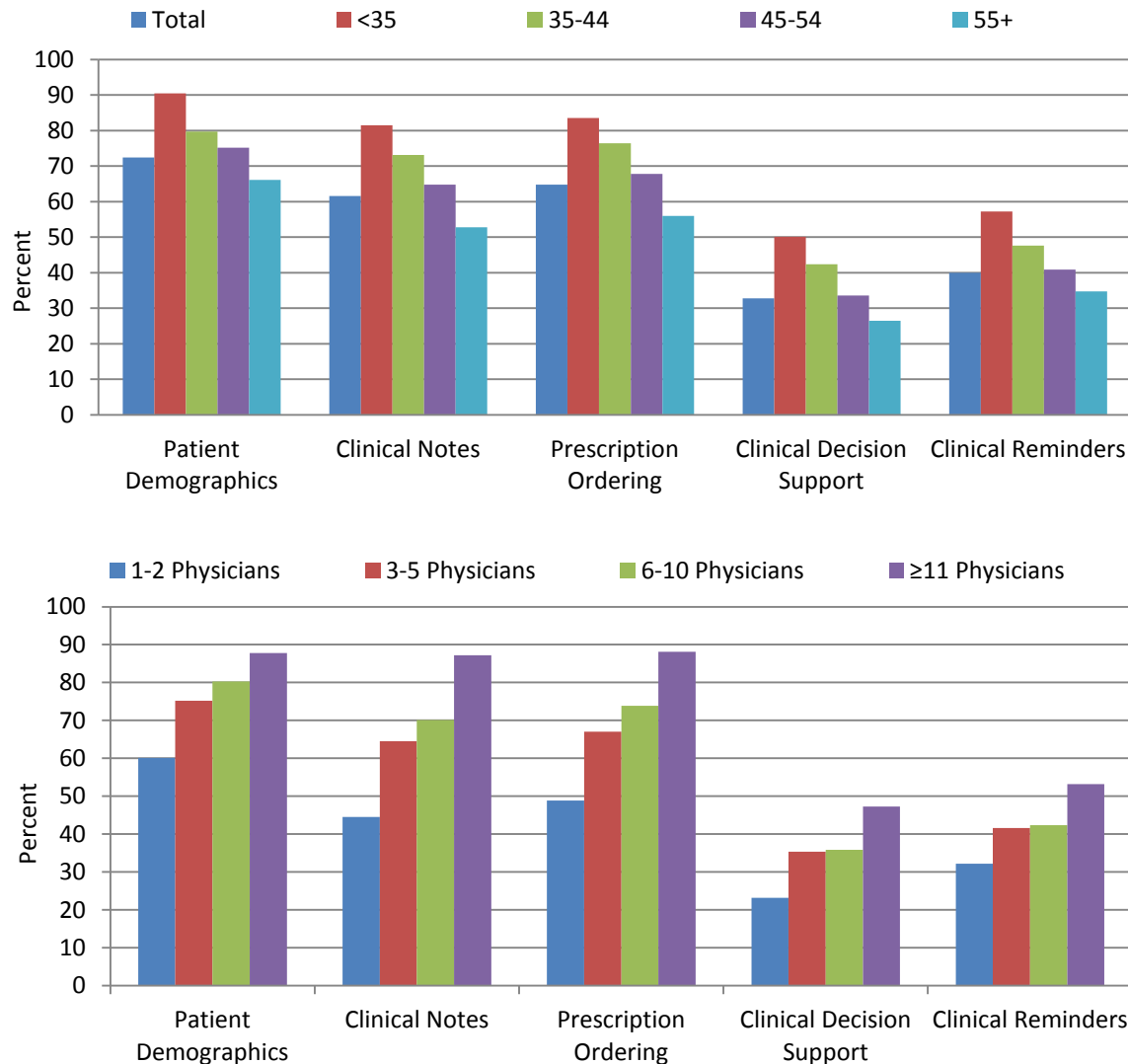
- In 2011, nearly all physicians in health maintenance organizations (HMOs), 73% of physicians in community health centers, and 69% of physicians in academic health

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centers had adopted an EHR system. Only 49% of providers in physician-owned practices had adopted EHRs.

- In 2011, 58% of primary care specialists, 54% of medical subspecialists, and 48% of surgical specialists had adopted an EHR system.

Figure 8.3. Electronic health record use by physician age and practice size, 2011



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Ambulatory Medical Care Survey, 2011 Electronic Medical Record Mail Survey Supplement.

Patient Demographics

- In 2011, 72.4% of office-based physicians with an EHR system had a component for patient demographics (Figure 8.3).
- In 2011, the percentage of practices with EHRs with a component for patient demographics was significantly higher for physicians under age 35 than for all other age groups.

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- In 2011, 87.8% of practices with an EHR system and 11 or more physicians had a component for patient demographics. This rate was significantly higher than the rate for physicians in solo practices (60.1%) and practices with 3 to 5 physicians (75.2%).
- In 2011, 73.9% of physicians in the West and Midwest, 72.3% of physicians in the Northeast, and 70.8% of physicians in the South with an EHR system had a component for patient demographics (data not shown).

Clinical Notes

- In 2011, 61.6% of office-based physicians with an EHR system had a component for clinical notes.
- In 2011, 81.5% of physicians under age 35 and 73.1% of physicians ages 35-44 with an EHR system had a component for clinical notes, which were both significantly higher than for physicians age 45 years and over.
- In 2011, 87.2% of practices with an EHR system and 11 or more physicians had a component for clinical notes; 70.1% of practices with 6 to 10 physicians, and 64.5% of practices with 3 to 5 physicians had EHRs with a component for clinical notes. Less than half of practices with one or two physicians had EHRs with a component for clinical notes (44.5%).
- In 2011, 67.6% of physicians in the West, 64.1% of physicians in the Midwest, 58.4% of physicians in the South, and 58.3% of physicians in the Northeast with an EHR system had a component for clinical notes (data not shown).

Prescription Ordering

- In 2011, 64.8% of office-based physicians with an EHR system had a component for ordering prescriptions.
- In 2011, the percentage of physicians who had an EHR system with a component for ordering prescriptions was much higher for physicians age 35 and under than for any other age group.
- In 2011, 88.1% of practices with 11 or more physicians and an EHR system had a component for ordering prescriptions; 73.9% of practices with 6 to 10 physicians, and 67.0% of practices with 3 to 5 physicians that had EHRs had a component for ordering prescriptions. Only about 50% of practices with one or two physicians and an EHR system had a component for ordering prescriptions.
- In 2011, 66.9% of physicians in the Midwest, 66.8% of physicians in the West, 64.8% of physicians in the Northeast, and 62.2% of physicians in the South with an EHR system had a component for ordering prescriptions (data not shown).

Clinical Decision Support

- In 2011, 32.8% of office-based physicians with an EHR system had a CDS component.
- In 2011, 50.1% of physicians under age 35 had an EHR system with a component for CDS, which is significantly higher than the percentage of physicians age 45 and over.
- In 2011, 47.3% of practices with an EHR system and 11 or more physicians had a component for CDS; 35.9% of practices that had EHRs and 6 to 10 physicians, and 35.4% of practices that had EHRs and 3 to 5 physicians had a CDS component. Only 23% of practices that had EHRs and one or two physicians had a CDS component.

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- In 2011, 38.0% of physicians in the West, 35.8% of physicians in the Midwest, 30.3% of physicians in the Northeast, and 29.2% of physicians in the South with an EHR system had a CDS component (data not shown).

Clinical Reminders

- In 2011, 40.0% of office-based physicians with an EHR system had a component for clinical reminders.
- In 2011, 57.2% of physicians under age 35 who had an EHR system had a component for clinical reminders, which is significantly higher than the percentage of physicians age 45 and over.
- In 2011, 53.2% of physicians who worked in practices that had EHRs and 11 or more physicians, 42.4% of physicians in practices with 6 to 10 physicians, and 41.6% of physicians in practices with 3 to 5 physicians had a component for clinical reminders. Only 32% of practices that had EHRs and one or two physicians had a component for clinical reminders.
- In 2011, 44.7% of physicians in the West, 42.6% of physicians in the Midwest, 37.5% of physicians in the South, and 36.9% of physicians in the Northeast with an EHR system had a component for clinical reminders (data not shown).

Also, in the NHDR:

- In 2011, office-based physicians located in areas with a non-Hispanic White population greater than 70% had the highest implementation rate of EHRs with components for patient demographics, clinical notes, and prescription ordering. Office-based physicians located in areas with a non-Hispanic White population greater than 80% had the highest implementation rate of EHRs with components for clinical decision support and clinical reminders.

Workforce Distribution

The IOM defines primary care as the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. Primary care physicians are specifically trained and skilled in comprehensive first contact and continuing care for persons with any undiagnosed sign, symptom, or health concern (the “undifferentiated” patient) not limited by problem origin (biologic, behavioral, or social), organ system, or diagnosis. Primary care physicians include family physicians, general internists, pediatricians, and obstetrician-gynecologists.ⁱⁱ

Family medicine physicians emphasize disease prevention and health promotion and coordinate care when referral is indicated and multiple providers are involved. Areas of subspecialty include adolescent medicine, geriatric medicine, hospice and palliative medicine, sleep medicine, and sports medicine.

ⁱⁱ American Board of Medical Specialties. http://abms.org/who_we_help/physicians/specialties.aspx. Accessed July 11, 2012.

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Internal medicine specialists are trained in adult medicine and provide comprehensive acute and chronic care to adolescents, adults, and older adults. Internists can focus on general internal medicine or on one of the 13 subspecialties, which include adolescent medicine, allergy and immunology, cardiology, endocrinology, gastroenterology, geriatrics, hematology, infectious disease, nephrology, oncology, pulmonology, rheumatology, and sports medicine.

According to the American Academy of Pediatrics, pediatricians focus on prevention, detection, and management of physical, behavioral, developmental, and social problems that affect children. Pediatric subspecialties include adolescent medicine, pediatric cardiology, pediatric emergency medicine, pediatric gastroenterology, pediatric nephrology, and pediatric pulmonology.

Obstetrician-gynecologists are skilled in the medical and surgical care of the female reproductive system and associated disorders. This distinguishes them from other physicians and enables them to serve as consultants to other physicians and as primary physicians for women. Subspecialties of obstetrics and gynecology include critical care medicine, female pelvic medicine and reconstructive surgery, gynecologic oncology, hospice and palliative medicine, maternal and fetal medicine, and reproductive endocrinology/infertility.

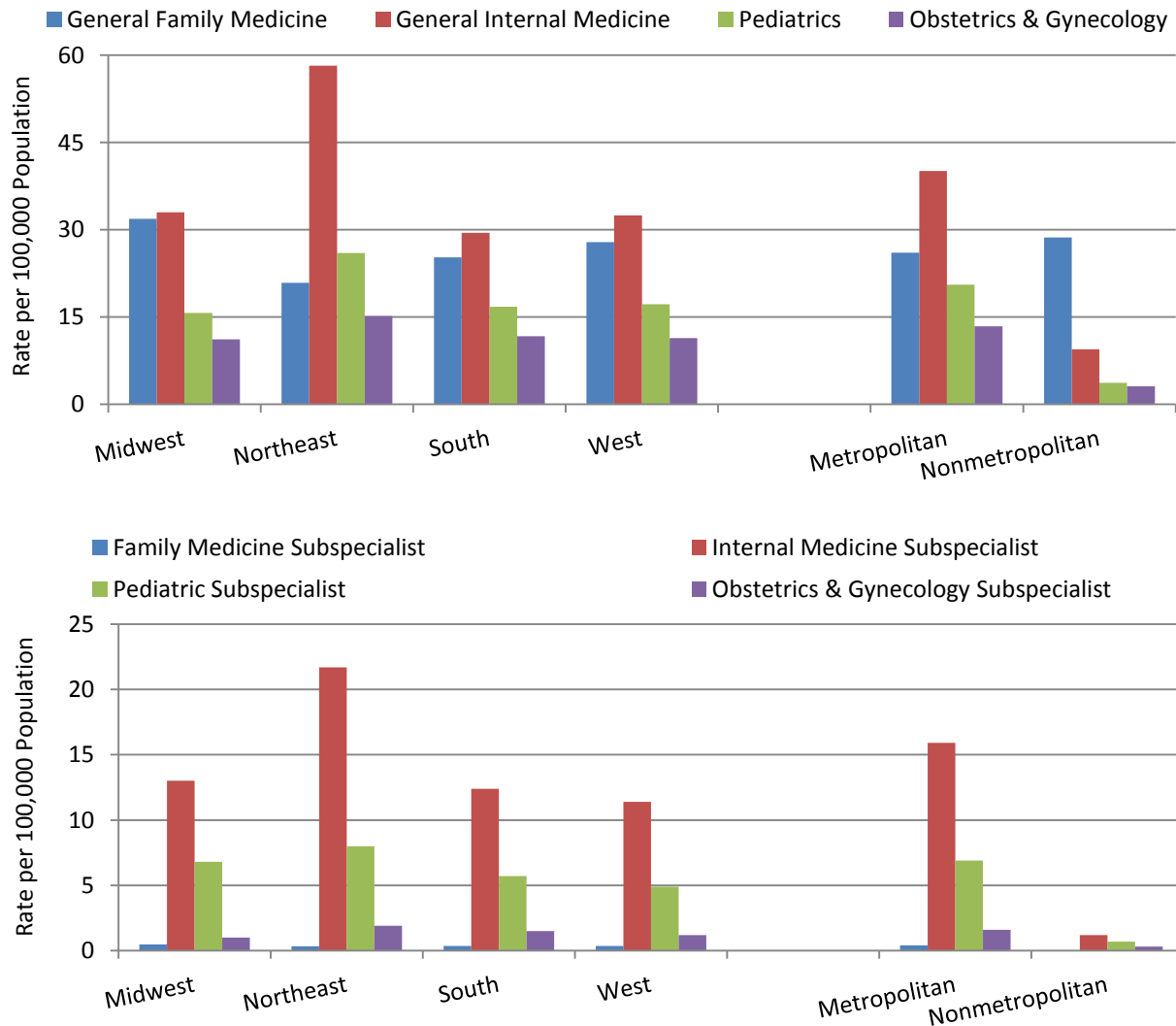
One way to improve health care is to ensure the adequacy and proportional distribution of the primary care physician supply. Unfortunately, the United States is currently facing a primary care physician workforce shortage. The number of physicians per capita grew rapidly at the end of the 20th century from 115 active patient care physicians per 100,000 population in 1965 to 190 in 1992. Almost the entire increase was among specialists. The primary care physician to population ratio grew by 14%, but the specialist to population ratio grew by 120%. Fifty-six percent of visits to physicians' offices are for primary care but only 37% of physicians practice primary care medicine, resulting in adult patients having difficulty gaining timely access to primary care (Bodenheimer & Pham, 2010).

The problem is even more acute in rural areas. The ratio of primary care physicians to populations in urban areas is 100 per 100,000 population but in rural areas it is less than half that rate, 46 per 100,000 (Bodenheimer & Pham, 2010).

Primary care physicians have been shown to play an important role in the health of the communities in which they serve. This year, the NHQR presents the geographic distribution of primary care and primary care subspecialty physicians.

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Figure 8.4. U.S. active non-Federal general and specialist physicians and surgeons, by geographic region and metropolitan status, 2008



Source: U.S. Department of Health and Human Services, Health Resources and Services Administration, Area Resource File.

- In 2008, the Midwest, South, and West all had higher rates of general family medicine physicians than the Northeast but only the Midwest had a significantly higher rate of family medicine subspecialists than the Northeast. Nonmetropolitan areas had a slightly higher rate of general family medicine physicians but the difference was not statistically significant (Figure 8.4).
- In 2008, the Northeast had higher rates of general internal medicine physicians and internal medicine subspecialists than the Midwest, South, and West. The rate of general internal medicine physicians in metropolitan areas was 4 times the rate for nonmetropolitan areas, and the metropolitan rate of internal medicine subspecialists was more than 10 times the nonmetropolitan rate.
- In 2008, the Northeast had higher rates of pediatricians and pediatric subspecialists than the Midwest, South, and West. The rate of pediatricians in metropolitan areas was more

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than five times the rate for nonmetropolitan areas, and the metropolitan rate of pediatric subspecialists was nine times the nonmetropolitan rate.

- In 2008, the Northeast had higher rates of obstetrician-gynecologists and obstetrics and gynecology subspecialists than the Midwest, South, and West. The rate of obstetrician-gynecologists in metropolitan areas was more than four times the rate for nonmetropolitan areas, and the metropolitan rate of obstetrics and gynecology subspecialists was five times the nonmetropolitan rate.

Also, in the NHDR:

- In all years, Asians had significantly higher rates of physicians and surgeons than all other racial groups. In 2010, the rate of Asian physicians and surgeons was 4 times the rate for Whites, 10 times the rate for Blacks, 14 times the rate for American Indians and Alaska Natives, and more than 5 times the rate for multiple-race individuals.
- In all years, the rates for non-Hispanic Whites were about three times the rates for Hispanic physicians and surgeons.

Organizational Capacity: Focus on the Health Care Safety Net

Concern has arisen about the composition and distribution of the health workforce and whether the Nation's health workforce will be able to meet the increasing demand for care that a growing and aging U.S. population will have. In his seminal work on health care quality, Donabedian (1980) describes a robust health care "structure"—the setting or infrastructure supporting the delivery of care (e.g., hospitals, providers)—as necessary to ensure that processes of care contribute to good outcomes. Structural deficiencies in the United States health care delivery system resulting from shortages of providers, growing demand, and a high rate of uninsurance and underinsurance have contributed to unmet need and could result in increased morbidity and health care costs.

Safety net providers play an integral role in relieving unmet needs. As defined in an IOM report, the U.S. health care safety net is composed of "[t]hose providers that organize and deliver a significant level of health care and other health-related services to the uninsured, Medicaid, and other vulnerable populations" (IOM, 2010). Safety net providers act as a default system, or providers "of last resort," by ensuring access to care for millions of Americans lacking medical coverage or provider access, regardless of education, social status, language competency, or ability to pay.

The safety net includes many different types of providers, including public health departments, hospitals, and Health Resources and Services Administration (HRSA) supported health centers (HSHCs). For the 50 million uninsured people and individuals with low income, safety net providers serve an essential function, eliminating financial barriers to care and enhancing access to services. As workforce shortages escalate, demand for safety net services is likely to increase.

This section includes a measure on trauma center utilization for severe injuries. Trauma centers often provide care unavailable elsewhere in the community and thus can become part of the safety net. This section also highlights the role of HSHCs as safety net providers by describing (1) the characteristics of people with an HSHC visit in 2010 and (2) the quality of care rendered to patients with hypertension and diabetes who are treated at these facilities.

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Trauma Center Utilization for Severe Injuries

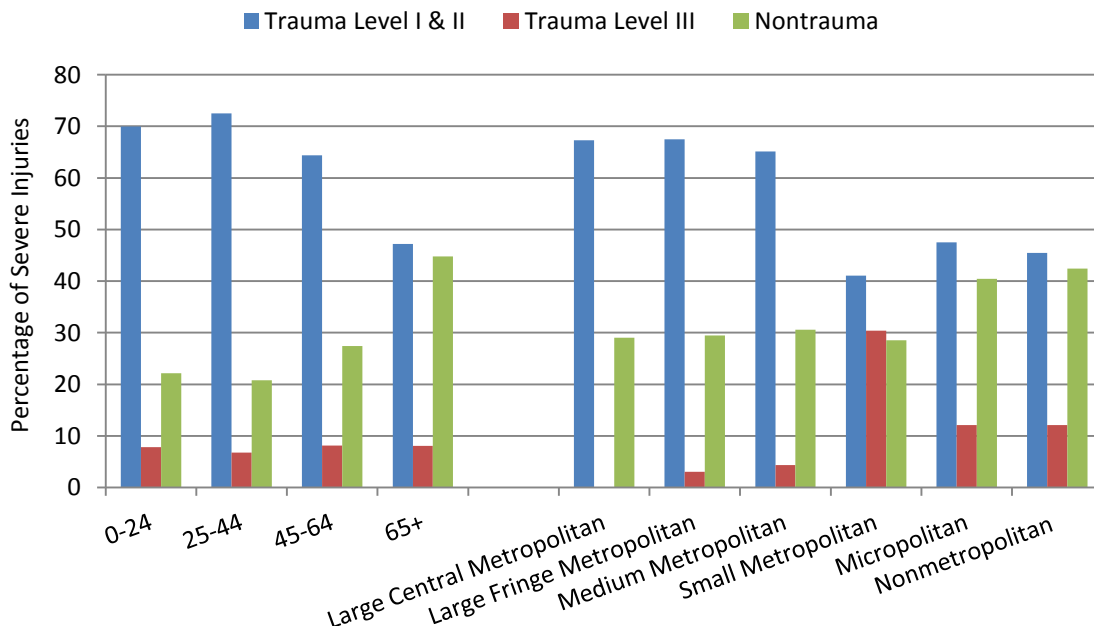
Trauma remains a considerable cause of mortality and morbidity worldwide, constituting a tangible public health burden with significant associated social and economic cost (Mansoor & DuBose, 2012). Trauma care systems, which were developed because it was recognized that trauma requires complex medical care, include a network of care facilities that provides a range of care for all injured patients. Trauma systems usually have a lead hospital, which should be the highest level available within the system. Levels range from level I to level III, with level I denoting the most clinically sophisticated hospitals.

Level I facilities are required to have a specific number of surgeons and anesthesiologists on duty at all times, as well as education, prevention, and outreach programs. The 24-hour coverage of surgery provides trauma patients with many surgical specialties as well, including neurosurgery, radiology, internal medicine, and critical care.

Level II trauma centers provide initial definitive trauma care regardless of the severity of the injury. When a level II center cannot provide the required care, the patient is transferred to a level I center.

Level III trauma centers are often considered community or rural-based hospitals and provide prompt assessment, resuscitation, emergency operations, and stabilizations and also arrange for transfer to a facility that can provide necessary care.

Figure 8.5. Trauma center utilization for severe injuries in the United States, by age and geographic location, 2009



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample, 2009.

Note: Trauma level III for large central metropolitan areas did not meet criteria for statistical reliability, data quality, or confidentiality.

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- People ages 25-44 were more likely to use level I and II trauma centers than people age 45 and over (Figure 8.5).
- In 2009, level I and II trauma centers located in large fringe metropolitan areas had significantly higher utilization rates than centers in small metropolitan, micropolitan, and nonmetropolitan areas.
- In 2009, level III trauma centers located in small metropolitan areas were used for severe injuries at 10 times the rate of trauma centers located in large fringe metropolitan areas, 7 times the rate for medium metropolitan areas, and more than twice the rate for micropolitan and nonmetropolitan areas.
- In 2009, large fringe metropolitan areas had a significantly lower utilization rate for nontrauma centers than micropolitan and nonmetropolitan areas.

Also, in the NHDR:

- In 2009, males were more likely to use level I and II trauma centers than females.
- In 2009, there were no statistically significant differences in the level I and II utilization rates of people living in communities at different income levels.
- In 2009, people living in communities with income in the second and third quartiles were more likely to use level III trauma centers than residents of communities with the highest income.

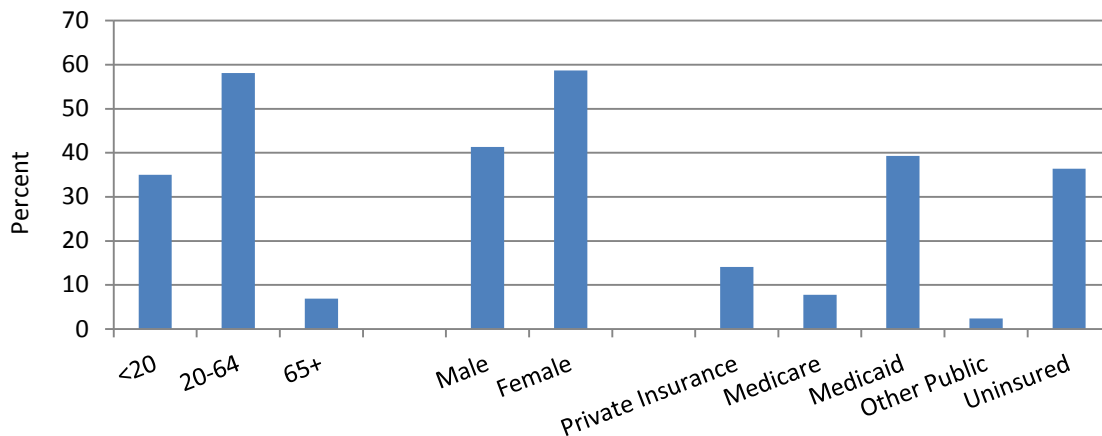
Patients Using HRSA Supported Health Centers

HSHCs include health care organizations that receive a grant under Section 330 of the Public Health Service Act, including community health centers, migrant health centers, Health Care for the Homeless programs, and Public Housing Primary Care programs. These organizations typically render services to low-income populations, uninsured people, people with limited English proficiency, migrant and seasonal agricultural workers, individuals and families experiencing homelessness, and public housing residents.

To obtain Federal grant funding, these public and nonprofit organizations agree to provide a minimum set of services, including primary and preventive care, referrals to mental health, and dental services. Access to care is available to all persons, regardless of ability to pay. Charges for services rendered are based on a sliding scale linked to patients' family income. More than 20 million people visited an HSHC in 2011.

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Figure 8.6. Characteristics of HSHC patients, by age, gender, and insurance status, 2011



Source: Health Resources and Services Administration, Bureau of Primary Health Care, Uniform Data System, 2011.

Note: Data were obtained from 1,128 Section 330 grantees.

- In 2011, the largest group of HSHC patients comprised adults ages 20-64 (58.1%; Figure 8.6), whereas adults age 65 and over made up only a small proportion of HSHC patients (6.9%).
- In 2011, a substantially larger percentage of females (58.7%) than males (41.3%) received treatment at an HSHC.
- In 2011, 36.4% of patients seen at an HSHC were uninsured and 39.3% had Medicaid.

Also, in the NHDR:

- In 2011, approximately two-thirds of patients seen at an HSHC were White (Hispanics and non-Hispanics), and one-quarter were Black.
- For those for whom income is known, almost three-quarters of patients seen in an HSHC in 2011 had income at or below the Federal poverty level but only 7.5% of patients had an income over 200% of the poverty level.ⁱⁱⁱ

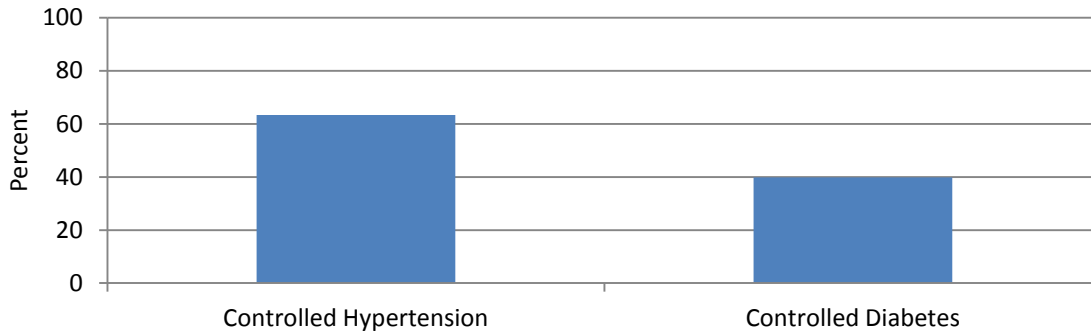
Control of Hypertension and Diabetes in HSHC Patients

More than 2.5 million adults treated at an HSHC in 2011 had a hypertension diagnosis, and almost 1.3 million had either type I or type II diabetes. The population with hypertension and diabetes may overlap, so the two numbers should not be added together. Control of hypertension and diabetes can help indicate quality of care at HSHCs since people with these conditions require frequent monitoring.

ⁱⁱⁱ Includes only patients for whom income is known.

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Figure 8.7. HSHC patients with hypertension or diabetes whose conditions are controlled, 2011



Source: Health Resources and Services Administration, Bureau of Primary Health Care, Uniform Data System, 2011.

Note: Data were obtained from 1,124 Section 330 grantees. Patients with hypertension include those ages 18-85. Hypertension is determined to be controlled if the patient's last blood pressure reading was less than 140/90 mm Hg. Patients with diabetes include those ages 18-75. Diabetes is determined to be controlled if the patient's most recent hemoglobin A1c level was 7% or less.

- In 2011, about 63% of HSHC patients with hypertension had controlled blood pressure at the time of their last blood pressure reading (Figure 8.7).
- Almost 40% of HSHC patients with diabetes were found to have a hemoglobin A1c (HbA1c) level below 7% at the time of their most recent test.
- Although the measure is based on a 4-year average for 2005-2008, the National Health and Nutrition Examination Survey estimates suggest that across the Nation, 54% of people with diabetes have their HbA1c levels under control (data not shown; for information, go to www.healthindicators.gov/).

Also, in the NHDR:

- In 2011, more than 70% of Asian, 65.5% of White, 64.8% of Pacific Islander, 60.2% of American Indians and Alaska Natives, and 60.1% of Native Hawaiian patients had their hypertension under control. Only 56.7% of Black patients had their blood pressure under control. Among Hispanic HSHC patients with hypertension, almost two-thirds had controlled blood pressure; more than one-third of Hispanics with diabetes had their HbA1c under control.

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Chapter 9. Access to Health Care

Many Americans have good access to health care that enables them to benefit fully from the Nation's health care system. Others face barriers that make it difficult to obtain basic health care services. As shown by extensive research and confirmed in previous National Healthcare Disparities Reports (NHDRs), racial and ethnic minorities and people of low socioeconomic status (SES)ⁱ are disproportionately represented among those with access problems.

Previous findings from the *National Healthcare Quality Report* (NHQR) and NHDR showed that health insurance was the most significant contributing factor to poor quality of care for some of the core measures, and many measures are not improving. Uninsured people were less likely to get recommended care for disease prevention, such as cancer screening, dental care, counseling about diet and exercise, and flu vaccination. They also were less likely to get recommended care for disease management, such as diabetes care management.

Poor access to health care comes at both a personal and societal cost. For example, if people do not receive vaccinations, they may become ill and spread disease to others. This increases the burden of disease for society overall in addition to the burden borne individually.

According to the Centers for Disease Control and Prevention (CDC), the lack of access to health care that results from inadequate insurance coverage should be greatly reduced by the Affordable Care Act (ACA). The ACA is expected to extend insurance coverage to an additional 27 million people by 2019 (CBO, 2013).

Recent studies by the Office of the Assistant Secretary for Planning and Evaluation have demonstrated early evidence of greater rates of insurance coverage among young adults. Before ACA implementation, young adults with private insurance were more than twice as likely to lose insurance coverage as older adults (Schwartz & Sommers, 2012). New estimates, however, show that from September 2010 to December 2011, more than 3 million additional young adults had coverage (Sommers, 2012). This includes an estimated 913,000 Latino, 509,000 African American, and 121,000 Asian young adults (Sommers & Kronick, 2012). Overall, males have significantly benefited from the expanded coverage, and their rate of coverage has increased from 57.9% to 72.0% (Sommers, 2012).

The ACA also makes significant changes to the Medicaid program. All citizens and legal permanent residents with a household income up to 133% of the poverty level who do not have access to affordable health coverage through their employers and who reside in a State that chooses to participate in the expansion will be eligible for Medicaid. This change could improve the health of millions of Americans. Medicaid expansions have been shown to reduce mortality among adults, particularly those ages 35-64 years, minorities, and residents of low-income areas (Sommers, et al., 2012).

ⁱ As described in Chapter 1, Introduction and Methods, income and educational attainment are used to measure SES in the NHDR. Unless specified, poor = below the Federal poverty level (FPL), low income = 100-199% of the FPL, middle income = 200-399% of the FPL, and high income = 400% or more of the FPL. The Measure Specifications and Data Sources appendixes provide more information on income groups by data source.

Components of Health Care Access

Access to health care means having “the timely use of personal health services to achieve the best health outcomes” (IOM, 1993). Attaining good access to care requires three discrete steps:

- Gaining entry into the health care system.
- Getting access to sites of care where patients can receive needed services.
- Finding providers who meet the needs of individual patients and with whom patients can develop a relationship based on mutual communication and trust.

Health care access is measured in several ways, including:

- Structural measures of the presence or absence of specific resources that facilitate health care, such as having health insurance or a usual source of care.
- Assessments by patients of how easily they can gain access to health care.
- Utilization measures of the ultimate outcome of good access to care (i.e., the successful receipt of needed services).

Facilitators and Barriers to Health Care

Facilitators and barriers to health care discussed in this chapter include health insurance, financial burden of health care costs, usual source of care (including having a specific source of ongoing care and a usual primary care provider), and patient perceptions of need.

Findings

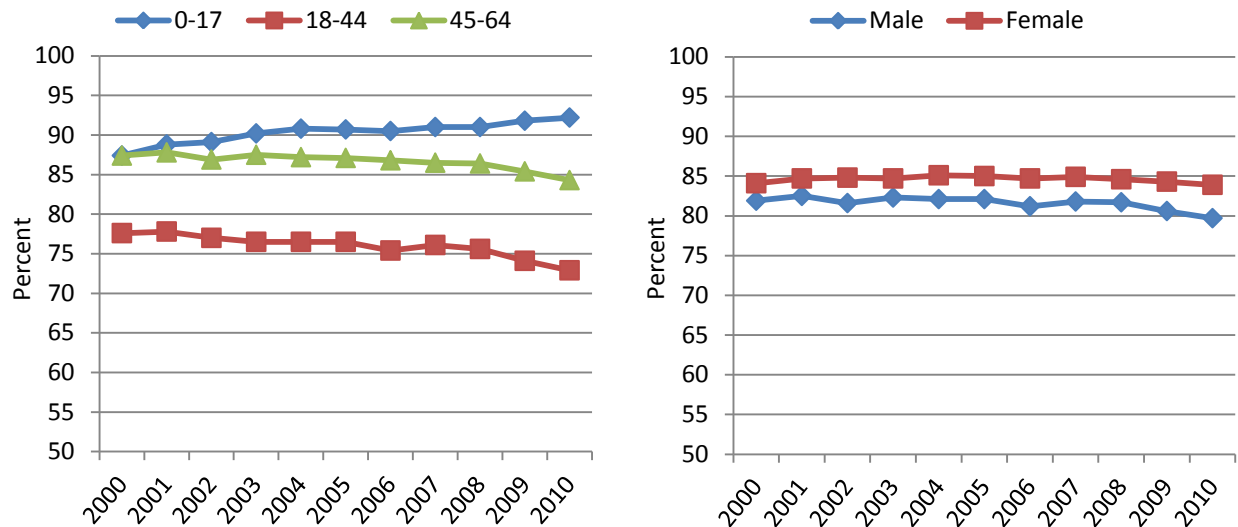
Health Insurance

Health insurance facilitates entry into the health care system. Uninsured people are less likely to receive medical care and more likely to have poor health status. The cost of poor health among uninsured people was almost \$125 billion in 2004 (Hadley & Holahan, 2004).

The financial burden of uninsurance is also high for uninsured individuals; almost 50% of personal bankruptcy filings are due to medical expenses (Jacoby, et al., 2000). Uninsured individuals report more problems getting care, are diagnosed at later disease stages, and get less therapeutic care. They are sicker when hospitalized and more likely to die during their stay (Hadley & Holahan, 2004).

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Figure 9.1. People under age 65 with health insurance, by age and gender, 2000-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey (NHIS), 2000-2010.

Denominator: Civilian noninstitutionalized population under age 65.

Note: NHIS respondents are asked about health insurance coverage at the time of interview. Respondents are considered insured if they have private health insurance, Medicare, Medicaid, State Children's Health Insurance Program, a State-sponsored health plan, other government-sponsored health plan, or a military health plan. If their only coverage is through the Indian Health Service, they are not considered insured. Estimates are not age adjusted.

- Overall, there was no statistically significant change from 2000 to 2010. In 2010, 81.8% of people under age 65 had health insurance (data not shown).
- From 2000 to 2010, the percentage of children ages 0-17 who had health insurance increased (from 87.4% to 92.2%; Figure 9.1). However, for adults ages 18-44 and 45-64, the percentage decreased (for ages 18-44, from 77.6% to 72.9%; and for ages 45-64, from 87.4% to 84.3%).
- In all years, adults ages 18-44 were less likely than children ages 0-17 and adults ages 45-64 to have health insurance.
- From 2000 to 2010, there was no statistically significant change in the percentage of males and females who had health insurance.
- Females were more likely to have health insurance than males throughout this period (in 2010, 83.9% compared with 79.7%).

Also, in the NHDR:

- From 2000 to 2010, American Indians and Alaska Natives (AI/ANs) under age 65 were less likely than Whites to have health insurance in all years. Blacks under age 65 were less likely than Whites to have health insurance in 7 of 11 years.
- In all years, Hispanics under age 65 were less likely to have health insurance compared with non-Hispanic Whites.
- From 2000 to 2010, the percentage of people with health insurance was significantly lower for poor, low-income, and middle-income people than for high-income people in all years.

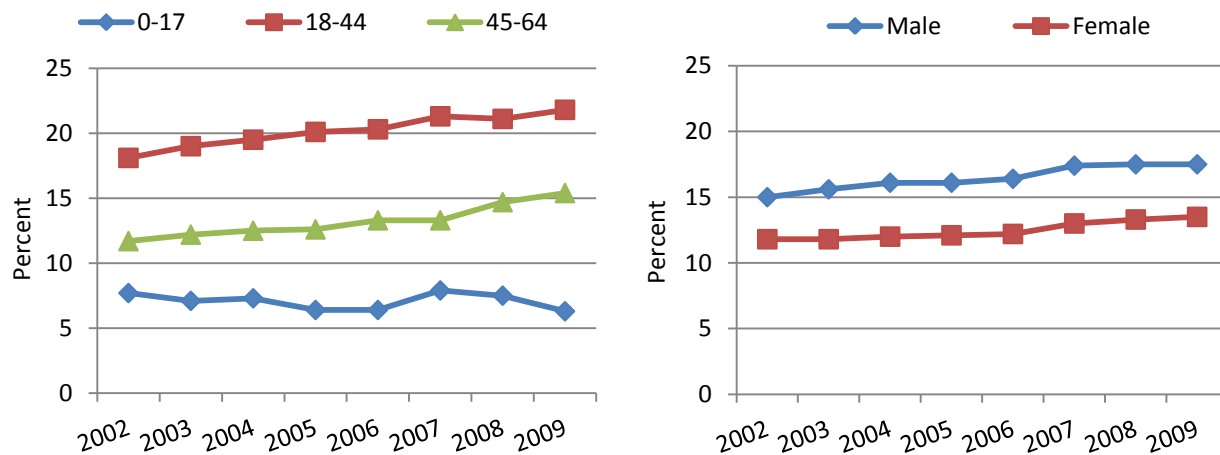
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- In 2010, people with less than a high school education were about one-third less likely than people with any college education to have health insurance.

Uninsurance

Prolonged periods of uninsurance can have a particularly serious impact on a person's health and stability. Uninsured people often postpone seeking care, have difficulty obtaining care when they ultimately seek it, and may have to bear the full brunt of health care costs. Over time, the cumulative consequences of being uninsured compound, resulting in a population at particular risk for suboptimal health care and health status.

Figure 9.2. People under age 65 who were uninsured all year, by age and gender, 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population under age 65.

Note: For this measure, lower rates are better.

- Overall, from 2002 to 2009, the percentage of people under age 65 who were uninsured all year increased from 13.4% to 15.5% (data not shown).
- From 2002 to 2009, children ages 0-17 were least likely to be uninsured all year, while adults ages 18-44 were most likely to be uninsured all year (in 2009, 6.3% for ages 0-17 and 21.8% for ages 18-44; Figure 9.2).
- From 2002 to 2009, females were less likely to be uninsured all year than males (in 2009, 13.5% compared with 17.5%).

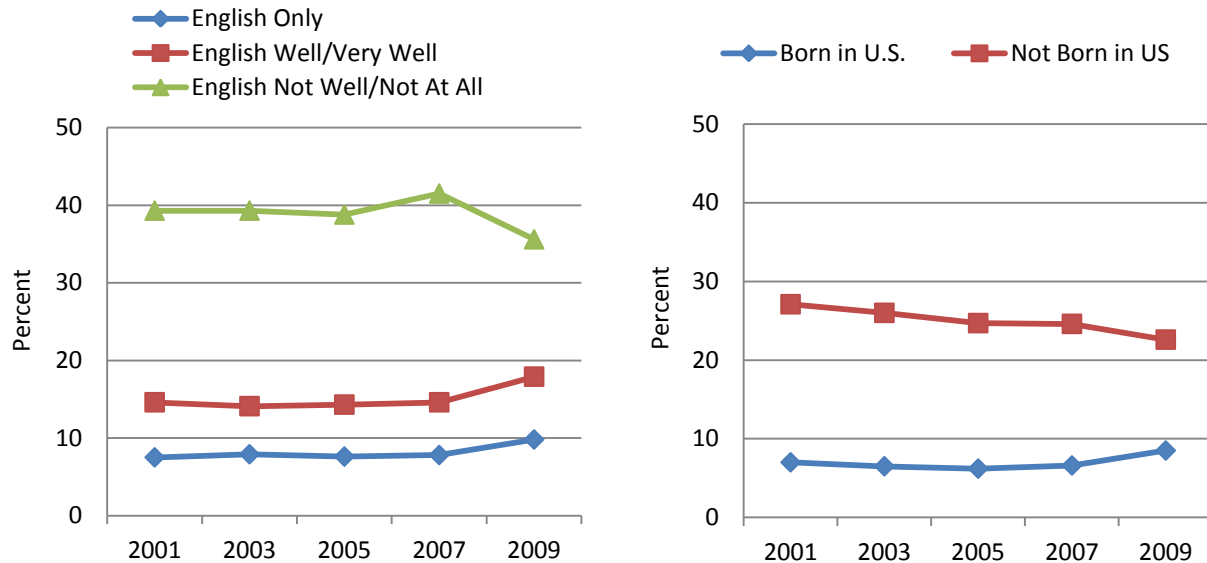
Also, in the NHDR:

- In 2009, AI/ANs were more likely than Whites to be uninsured all year.
- In all years, Hispanics were much more likely than non-Hispanic Whites to be uninsured all year.
- In 2009, the percentage of poor and low-income people who were uninsured all year was more than four times as high as that for high-income people. The percentage of middle-income people uninsured all year was more than twice as high as that for high-income people.

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- From 2002 to 2009, the percentage of people who were uninsured all year was nearly three times as high for people who spoke another language at home as that for people who spoke English at home.

Figure 9.3. People under age 65 who were uninsured all year, California, by English proficiency and place of birth, 2001-2009



Source: University of California, Los Angeles, Center for Health Policy Research, California Health Interview Survey, 2001-2009.

Denominator: Civilian noninstitutionalized population ages 0-64 in California.

Note: For this measure, lower rates are better.

- In California, from 2001 to 2009, there was no statistically significant change in the percentage of people who were uninsured all year (12.4% compared with 12.2%; data not shown).
- During this period, people in California who spoke English well or very well were about twice as likely to be uninsured all year and people who did not speak English well or did not speak English at all were nearly five times as likely as those who spoke English only to be uninsured all year (Figure 9.3).
- During this period, people in California who were not born in the United States were more than three times as likely as people who were born in the United States to be uninsured all year.

Financial Burden of Health Care Costs

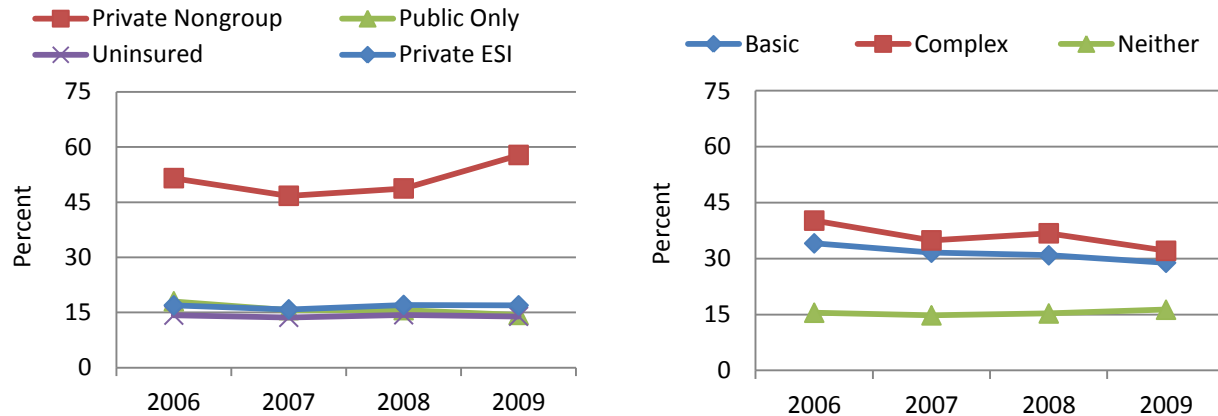
Health insurance is supposed to protect individuals from the burden of high health care costs. However, even with health insurance, the financial burden of health care can still be high and is increasing (Banthin & Bernard, 2006). High premiums and out-of-pocket payments can be a significant barrier to accessing needed medical treatment and preventive care (Alexander, et al., 2003).

According to one study, uninsured families can afford to pay for only 12% of hospitalizations that they experience (Chappel, et al., 2011). One way to assess the extent of financial burden is

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to determine the percentage of family income spent on a family's health insurance premium and out-of-pocket medical expenses.

Figure 9.4. People under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income, by insurance and activity limitation, 2006-2009



Key: ESI = employer-sponsored insurance.

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2006-2009.

Denominator: Civilian noninstitutionalized population under age 65.

Note: For this measure, lower rates are better. Total financial burden includes premiums and out-of-pocket costs for health care services.

- Overall, in 2009, 17.4% of people under age 65 had health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income (data not shown).
- In all years from 2006 to 2009, the percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was three times as high for individuals with private nongroup insurance as for individuals with private employer-sponsored insurance (Figure 9.4). During this same period, there was no statistically significant difference between publicly insured individuals and individuals with employer-sponsored insurance in 3 of 4 years.
- The gap narrowed between people with private employer-sponsored insurance and public insurance whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income. The gap also narrowed between people with neither basic nor complex activity limitations and people with activity limitations (both basic activity limitations and complex limitations).
- In all years, females were more likely than males to have family's health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income (data not shown).
- In all years, people with activity limitations (both basic activity limitations and complex limitations) were significantly more likely than people with neither type of activity limitation to have family's health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income.
- During this same period, there was a significant decrease in the percentage of people with basic activity limitations to have family's health insurance premium and out-of-pocket medical expenses that were more than 10% of total family income.

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Also, in the NHDR:

- From 2006 to 2009, the percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was lower for Blacks than for Whites and lower for Hispanics than for non-Hispanic Whites in all years.
- During this period, the percentage of people under age 65 whose family's health insurance premium and out-of-pocket medical expenses were more than 10% of total family income was at least four times as high for poor individuals, about three times as high for low-income individuals, and more than twice as high for middle-income individuals compared with high-income individuals in all years.

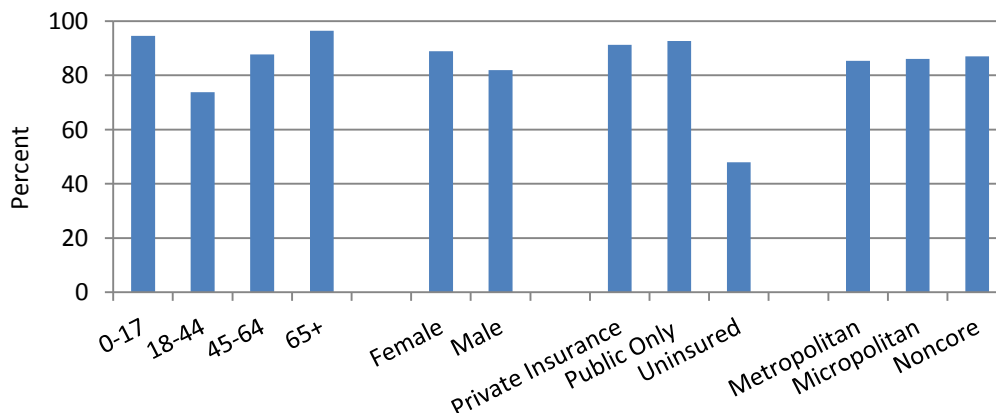
Usual Source of Care

People with a usual source of care (a provider or facility where one regularly receives care) experience improved health outcomes and reduced disparities (smaller differences between groups) (Starfield & Shi, 2004) and costs (De Maeseneer, et al., 2003). Evidence suggests that the effect on quality of the combination of health insurance and a usual source of care is additive (Phillips, et al., 2004). In addition, people with a usual source of care are more likely to receive preventive health services (Ettner, 1996).

Specific Source of Ongoing Care

The term “specific source of ongoing care” accounts for patients who may have more than one source of care. For example, women of childbearing age and older people tend to have more than one doctor. A specific source of ongoing care can include an urgent care/walk-in clinic, doctor's office, clinic, health center facility, hospital outpatient clinic, health maintenance organization/preferred provider organization, military or other Veterans Affairs health care facility, or some other similar source of care (however, hospital emergency rooms are excluded).

Figure 9.5. People with a specific source of ongoing care, by age, gender, insurance (under age 65), and residence location, 2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2010.

Denominator: Civilian noninstitutionalized population of all ages.

Note: Measure data are not age adjusted. A hospital emergency room is not included as a specific source of ongoing care.

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- Overall, 85.5% of people had a specific source of ongoing care in 2010 (data not shown).
- In 2010, people age 65 and over were most likely to have a specific source of ongoing care (96.5%), while people ages 18-44 were least likely to have a specific source of ongoing care (73.8%; Figure 9.5).
- Females were more likely to have a specific source of ongoing care than males (88.9% compared with 81.9%).
- In 2010, people with private insurance were nearly twice as likely to have a specific source of ongoing care as uninsured people (91.2% compared with 48.0%).

Also, in the NHDR:

- In 2010, the percentage of people with a specific source of ongoing care was significantly lower for Hispanics than for non-Hispanic Whites.
- In 2010, the percentage of people with a specific source of ongoing care was significantly lower for poor and low-income people than for high-income people.
- In 2010, the percentage of people with a specific source of ongoing care was significantly lower for people with less than a high school education than for people with any college education.

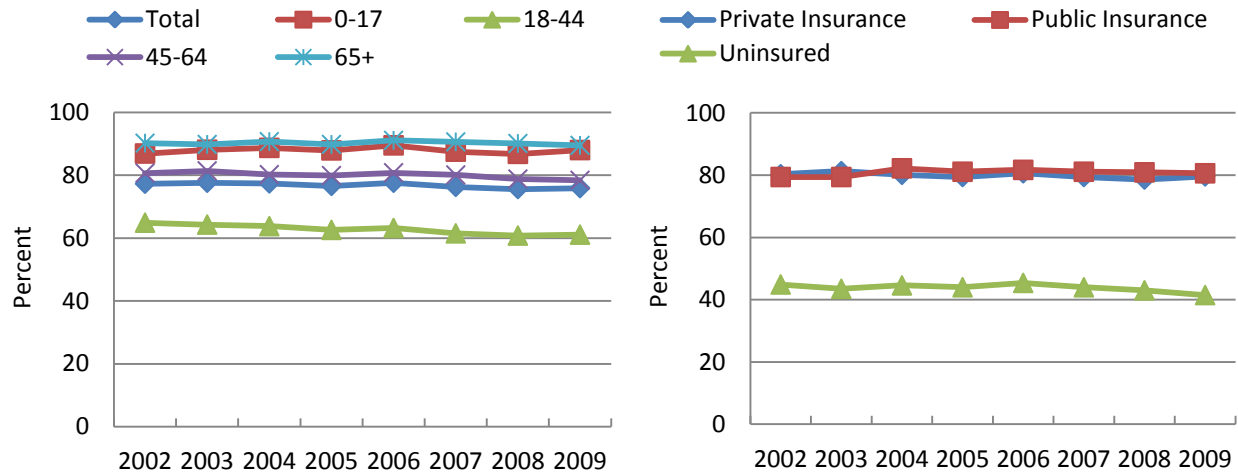
Usual Primary Care Provider

Having a usual primary care provider (a doctor or nurse from whom one regularly receives care) is associated with patients' greater trust in their provider and with good provider-patient communication. These factors increase the likelihood that patients will receive appropriate care. By learning about patients' diverse health care needs over time, a usual primary care provider can coordinate care (e.g., visits to specialists) to better meet patients' needs. Having a usual primary care provider correlates with receipt of higher quality care (Parchman & Burge, 2002; Inkelas, et al., 2004).

A person is determined to have had a primary care provider if his or her usual source of care setting was either a physician's office or a hospital (other than an emergency room) and he or she reported going to this usual source of care for new health problems, preventive health services, and physician referrals.

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Figure 9.6. People with a usual primary care provider, by age and insurance (under age 65), 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population of all ages.

Note: A usual primary care provider is defined as the source of care that a person usually goes to for new health problems, preventive health care, and referrals to other health professionals.

- Overall, in 2009, about 76% of people had a usual primary care provider (Figure 9.6).
- In all years, people ages 18-44 were least likely to have a usual primary care provider, while people age 65 and over were most likely to have a usual primary care provider (in 2009, 61.1% and 89.5%, respectively).
- In all years, uninsured people ages 0-64 were much less likely to have a usual primary care provider than people with private or public insurance (in 2009, 41.5% compared with 79.6% and 80.6%, respectively). There were no statistically significant differences between people with public insurance and people with private insurance in the percentage with a usual primary care provider.
- In all years, there were no statistically significant differences between residents of nonmetropolitan areas and residents of large fringe metropolitan areas (data not shown).

Also, in the NHDR:

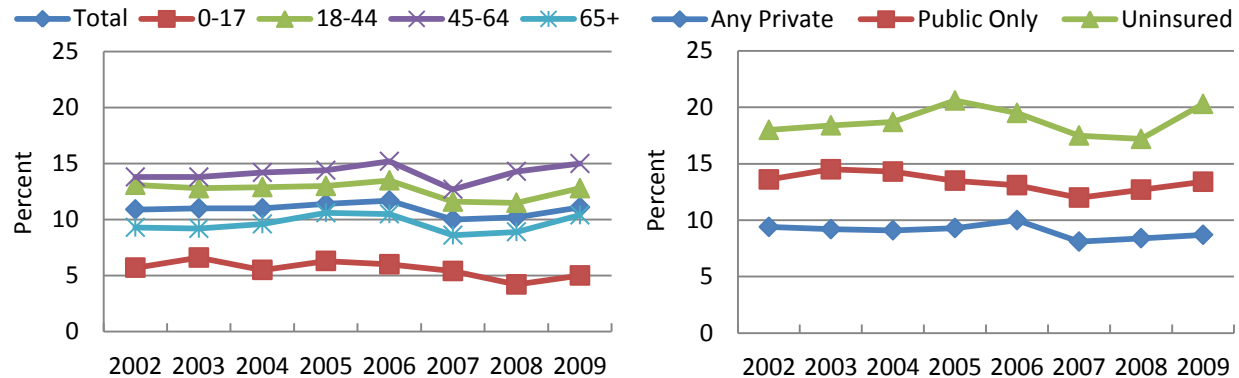
- From 2002 to 2009, Blacks were less likely than Whites to have a usual primary care provider in all years and Asians were less likely than Whites to have a usual primary care provider in 7 of 8 years.
- In all years, the percentage of people with a usual primary care provider was lower for Hispanics than for non-Hispanic Whites.
- In all years, poor, low-income, and middle-income people were significantly less likely than high-income people to have a usual primary care provider.

Patient Perceptions of Need

Patient perceptions of need include perceived difficulties or delays in obtaining care and problems getting care as soon as wanted. Although patients may not always be able to assess their need for care, problems getting care when patients perceive that they are ill or injured likely reflect significant barriers to care.

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Figure 9.7. People who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines in the last 12 months, by age and insurance (under age 65), 2002-2009



Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey, 2002-2009.

Denominator: Civilian noninstitutionalized population of all ages.

Note: For this measure, lower rates are better.

- Overall, the percentage of people who were unable to receive or delayed in receiving needed medical care, dental care, or prescription medicines significantly increased between 2002 and 2009 (Figure 9.7).
- In all years, people ages 18-44 were more likely than people age 65 and over and, in 7 of 8 years, people ages 0-17 to be unable to get or delayed in getting needed medical care, dental care, or prescription medicines (Figure 9.7).
- In all years, uninsured people and people with public insurance were more likely than people with private insurance to be unable to get or delayed in getting needed medical care, dental care, or prescription medicines. In 2009, for people under age 65, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was more than twice as high for people with no health insurance as for people with private insurance (20.3% compared with 8.7%).

Also, in the NHDR:

- In 2009, Asians and Hispanics were less likely than Whites and non-Hispanic Whites to report that they were unable to get or delayed in getting needed medical care, dental care, or prescription medicines.
- In all years, the percentage of people who were unable to get or delayed in getting needed medical care, dental care, or prescription medicines was significantly higher for poor, low-income, and middle-income people than for high-income people.

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